Telecommunications & Broadcasting Asian Regional Market Brief

Including Reports from Australia, China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand, Vietnam and the Asian Development Bank

The U.S. Commercial Service is dedicated to assisting U.S. businesses export goods and services to markets worldwide.

Our Asia Now initiative brings together the resources of U.S. Commercial Service offices in 14 Asian countries and export assistance centers throughout the U.S. Asia Now provides you with a single point of access to our staff, programs and research covering Asian markets, as well as extensive services designed to help your company establish partnerships, market products, participate in trade events and otherwise succeed in the Asia Pacific region.

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US Department of Commerce
US Commercial Service – Asia Now
Multi-Market Brief on Telecom and Broadcasting

Foreword

Introducing Asia Now

On March 5, 2003, the United States Department of Commerce's U.S. Commercial Service officially launched **Asia Now**, a coordinated commercial export promotion initiative aimed at encouraging and supporting a multi-market entry strategy for American companies wishing to sell products and services into the Asia Pacific region. As a multi-dimensional program, **Asia Now** will include innovative offerings by various Commercial Services offices located throughout the region, cost-effective, "bundled" services at regional trade exhibitions (such as CommunicAsia 2003), and a variety of opportunities that can help companies leverage the Commercial Service's resources for promotion of U.S. exports to Asia.

Asia Now Multi Market Briefs

The Asia Now program will also sponsor regional market research, including multi-market reports, with the aim of assisting U.S. companies in developing a more regional perspective and approach to Asia. By providing concise, updated and sector specific information on more than one country or market, Asia Now Multi-Market briefs allow U.S. small and medium-sized exporters (SMEs) to obtain both a general sense of the opportunities and challenges in the Asia Pacific region, as well as data that can help develop informed decisions on how to prioritize specific markets. With this report, the U.S. Commercial Service offers its inaugural Asia Now Multi-Market brief on the telecom and broadcasting sector, which has been identified as one of the best prospect for U.S. companies seeking to expand into the region's markets.

This multi-market brief was prepared by in-country Commercial Specialists with telecom and broadcasting industry expertise to facilitate U.S. companies' introduction to these specific Asian markets. This report covers the telecom and broadcasting sectors in China, Taiwan, Hong Kong, Singapore, Australia, Russia, Japan, South Korea, Singapore, Malaysia, the Philippines, Thailand, Indonesia, India, and the Asian Development Bank and contains "user-friendly" highlights on: market overview and outlook, competition, market sector size and growth, impact of regulatory issues and standards, best prospects for U.S. companies, distribution channels and potential barriers to market entry.

Overview of the Telecom and Broadcasting Sectors

Asia is the world's fastest growing market for internet and broadband use, offering opportunities for wire-line and wireless technology platforms, next generation network technology, and internetworking of technologies.

In terms of fixed line and cellular penetration rates in the region, Hong Kong's fixed lines density is among the highest in Asia at 56%, while other countries with high teledensity include Japan with 48.1%, Australia at 98%, 46.4 % in Singapore, 49% in South Korea; Taiwan at 48%, and Russia at

33%. Cell phone penetration is also high in these markets--62.7% in Japan and 86% in Hong Kong, for example.

Among Asian countries with lower teledensity rates are Indonesia at 3.7%, India 3.6%, Thailand with 14%, Malaysia at 18.8% and the Philippines with 8.91%. Cell phone penetration rates in developing markets are also relatively low, ranging from 1.1% (India) to 5.2% (Indonesia).

Asia's active adoption of both new, and in many markets, the leading edge wire-line and wireless technology platforms have created more demand for U.S. broadband content applications, and services to support the following:

- Internet Protocol (IP) integration applications;
- mobile gaming and entertainment;
- GSM;
- 3G & 4G applications;
- GPRS;
- LAN/WAN/VPS technologies;
- broadband networks;
- content delivery networks;
- streaming and multimedia infrastructure;
- Voice over Internet Protocol;
- high speed networking e.g. Ethernet, optical networks;
- broadband satellite launch service capabilities and content and services in television in Asian markets.

Through examination of this comprehensive multi-market brief, companies will be able to quickly assess the telecom market potential for each country based on current and expected trends and demand. The report will also assist in creating an effective market entry strategy which can be developed upon a solid understanding of each market's stage of technological development, overview of foreign government regulations, status of market liberalization, and growth trends in the sectors of telecom and broadcasting.

Asia Now Trade Show Support-- Co-Exhibitor Launch at CommunicAsia 2003

As a market-entry program for U.S. SME's interested in doing business in Asia, **Asia Now** also offers proven, cost-effective services to assist U.S. companies in establishing a foothold or expanding its presence in the region. As part of its focus on the Asian telecom market, Asia Now has established a Co-Exhibitor option for first-time U.S. exhibitors at CommunicAsia 2003, one of the industry's most prominent shows in the region.

The Co-Exhibitor program provides U.S. companies that wish to explore and experience the market first-hand. Participation in the program includes: low-cost (shared) booth space to demo or exhibit products and literature, pre-arranged, one-on-one meetings with prospective distributors, resellers, and other business partners (identified and qualified according to criteria submitted by U.S. company), briefings from relevant U.S. Embassy commercial specialists from 14 regional markets (i.e. authors of the Asia Now Multiple-market briefs), on-site support, U.S. Embassy rates for hotel accommodations, and more.

To obtain additional details on and register your interest in this program at CommunicAsia or Broadcast Asia 2003, please contact Mari Felton-Beal at (408) 271-7300 x104 or Mari.Felton@mail.doc.gov or go to www.buyusa.gov/asianow/communicasia.html

SECTION I:

AUSTRALIA

1. Market Overview

Australia's telecommunications sector has developed progressively from a largely centralized, publicly controlled monopoly structure, to an open and competitive market regime with an emphasis on industry self-regulation.

Liberalization of the market in 1997 has reportedly delivered significant benefits to Australian businesses and consumers and to the wider economy. Users now have a greater choice of suppliers of telecommunications services offering a broad range of new and innovative services and products. Companies are more responsive to the needs of their customers, the quality of services has improved, and lower prices have been achieved for telephone calls, especially long-distance calls. Investment opportunities in the telecommunications sector have expanded and service provision to remote and under-served areas, as well as to the main population centers, has accelerated. Despite partial privatization, Telstra remains majority government-owned, and has a market monopoly on 100% of Australia's land-line network and is the dominant player in internet service provision and mobile telephony.

According to the federal Department of Communications, Information Technology and the Arts, consumers in the telecommunications market have benefited significantly from the changes wrought by privatization. These changes have included the introduction of a Customer Service Guarantee; the upgrading of the Universal Service Obligation; legislated rights to un-timed local calls, and the introduction of a Network Reliability Framework. Government sources indicate more than US$600 million in targeted funding was allocated for sustainable improvements in communications and information technology infrastructure and in service delivery, particularly in rural and regional areas. State and local governments and regional development organizations has been fostered to develop a more consistent approach to service improvements.

Highlights in the Australian telecommunications sector since privatization in 1997 have included new investments in the telecommunications sector totaling more than US$12 billion; the introduction into the market of more than 80 new carriers and 850 new service providers. Prices for consumers have fallen by an average of 6.9% per year. The Australian Communications Authority (ACA) identified an annual benefit to consumers from changes to telecommunications services of up to $12 billion in 2000–01.

2. Regulatory Regime

Regulations that apply to the Australian telecommunications industry are similar to those governing general competition in the economy as regulated by the provisions of the Trade Practices Act of 1974. Australia's single national industry regulatory body, the Australian Competition and Consumer Commission (ACCC), has assumed responsibility for competition and economic regulation of telecommunications. The transfer of functions to the ACCC from the previous industry-specific regulator reflected the policy that all competition regulation should be undertaken by a single competition regulator so as to concentrate resources, maximize expertise and importantly, promote consistent regulation across sectors.

The reforms also inserted into the Trade Practices Act 1974 telecommunications-specific pro-competitive provisions to deal with anti-competitive conduct and to establish an access regime of rights and obligations for carriers and service providers aimed at promoting the long-term interests of end-users.

In keeping with the broad philosophy of competition policy, reliance on industry self-regulation is promoted to the greatest practicable extent, particularly in technical regulation and through the use of codes of practice. While market-driven solutions are encouraged, legislative safety nets exist to support the operation of the market and provide consumer safeguards.

To allow for a high degree of industry self-regulation, the Australian regulatory framework has involved the establishment of both Commonwealth Government and industry regulatory bodies.

The Australian Communications Authority (ACA), a Commonwealth Government regulator, is responsible for administering a range of technical and consumer issues relating to telecommunications, as well as managing the radio-frequency spectrum. The ACA licenses telecommunications carriers and reports to the Minister for Communications, Information Technology and the Arts on the performance of carriers and service providers. The ACA works closely with the Australian Communications Industry Forum, encouraging industry to develop voluntary codes of practice and technical standards where they are in the public interest and do not impose undue financial and administrative burdens on industry participants. Industry codes may be registered by the ACA, which then enables the ACA to require an industry participant to comply with the Code.

The ACA performs a key consumer protection function through administration of codes and standards, and in particular, the universal service obligation and customer service guarantee provisions of the Act. The ACA has the capacity to enhance consumer protection arrangements should self-regulation fail, including the ability to set mandatory customer service standards. The ACA also administers the national numbering plan. The ACA represents Australia's communications interests abroad through participation in the work of international organizations, such as the International Telecommunication Union, for technical standardization and coordination of services between countries.

The Australian Communications Industry Forum (ACIF) was established in May 1997 as the peak industry body to facilitate and manage telecommunications self-regulation. ACIF's main role is to develop and administer industry technical and operating arrangements that promote both the long-term interests of end-users and the efficiency and international competitiveness of the Australian communications industry. Its primary functions include the development of industry codes of practice for registration, and the production of technical standards, specifications, plans and guidelines that the industry and community need.

The pro-competitive reforms have opened up the opportunity to build and operate telecommunications infrastructure. Past regulatory barriers to market entry, as well as a number of artificial regulatory distinctions, such as between mobile and fixed carrier licenses, have been removed. No restrictions exist on entry to any telecommunications service market and there are minimal restrictions on the types of technology used.

As far as practicable, market solutions are encouraged and relied upon. There are no restrictions on the installation of telecommunications infrastructure (subject to relevant planning and environmental laws). Industry operators now have much greater freedom to pursue whatever business strategy they choose.

All carriers, unless otherwise exempted, are obliged to develop, and keep current, an industry development plan relating to their strategic commercial relationships, research and development plans, involvement with domestic industry and export facilitation plans.

Foreign ownership in the industry is, with the exception of “Telstra”, subject to the general provisions of the Foreign Acquisitions and Takeovers Act 1975. Under this policy, investment proposals that exceed specified limits (the limit being US$200 million) are subject to the approval of the Foreign Investment Review Board.

3. Best prospects

Best prospects for American suppliers in the telecommunications market exist for providers of mobile

telephony services, and through the proposed expansion of the sale of majority government-owned entity – Telstra.

a) Mobile telephony. The introduction of mobile phones into the Australian market in the 1990s was embraced enthusiastically by the Australian market. Mobile telephones are a highly suitable business tool for Australian companies, particularly small-to-medium enterprises. The need for mobile communications in Australia is underlined by the vastness of the Australian continent, and the distances covered by local businesses involved in client visits and on-site work, such as those in the trades or construction industries. This pattern mirrors high take-up rates for new technology in Australia in the recent past for such innovations as personal PCs, the internet, DVDs and VCRs. American service providers would do well that can provide cost-competitive rates, and focus on quality customer service, as Australian service standards are relatively low by comparison to those enjoyed by American consumers. American investors could take advantage of the current situation in the telecommunications market, whereby the existing number of service providers cannot be sustained in the long-term. Therefore, by purchasing the less competitive providers and consolidating their client bases, good gains could be made.

b) Expanded privatization of Telstra. Once a wholly government-owned enterprise, Telstra has been sold off progressively by the Australian Government through public offerings of shares. The first round of privatization occurred in March 1996, with the sale of one-third of the government's equity in the company. This was followed by an additional 16.6 per cent sale in June 1999. Recent announcements by the Howard Government have confirmed the government's intention to sell its remaining more than half share of the company, subject to improvements in service delivery and infrastructure development in rural and regional Australia. Should Telstra be wholly privatized, as is expected within the next five years, this would provide substantial opportunities for American companies seeking to expand both domestic and mobile telephony services into the Australian market. Prospects for a full sale may be compromised through strong political opposition to the sale from opposition political parties in Australia that could potentially block any bill for the sale through the Australian Senate.

c) New opportunities in Third Generation or 3G. The capacity for 3G to enable users to send images and video via their mobile phone provides new opportunities for service provision, although the product remains relatively unknown to the general public. Should demand increase, there is scope in this market for new players, provided their services remain cost-competitive. In May 2001, Telecom New Zealand announced it would partner Hutchison Telecommunications Australia to launch 3G mobile phone services in Australia. This decision marked the initial entry into the market for 3G mobile telephony, an area of the market that is somewhat under-capitalized. In more recent times, Orange has also explored opportunities in this area, while Optus has license for 3G in Australia, but as yet has no plans to launch a service. The 3G industry's peak body, UMTS Forum, claims annual turnover from 3G services will be about US$200 billion by 2010. Optimistic projections for this market should be tempered with the knowledge that the capital costs of rolling-out this new technology, given the small total market, may act as a disincentive to new investors. It has been estimated that the global cost of upgrading to third generation, 3G, networks could be half a trillion dollars - possibly more. Industry pundits have predicted that Australia's contribution would be more than $10 billion.

d) Broadband internet. Broadband internet access provides substantial improvements for users in the speed of their internet downloads, and enables enhanced user features including video and audio streaming. The two main providers for broadband currently are Telstra and Optus, who are utilizing their own infrastructure to provide the service. Other providers are merely selling-on access to these two networks. . Broadband internet services in Australia are still in their infancy, with most home-users still using dial-up modems to access the net. By July 2002 only 300,000 Australians had broadband internet access. Telstra has spent US$200M on installation of the infrastructure, and expects to have spent US$600M by 2006 on broadband enablement. There are market inhibitors at work – Telstra users are hit by a "data cap" once they reach their download limit, and are charged a substantial price mark-up for additional data. This acts as a disincentive for users, as does the cost. The average price of US$30-60 per month for access plus excess use charges is thought to be too

expensive. Provided that new market players were prepared to invest in rolling out new infrastructure, there is a definite market niche for a new players who can provide broadband access at less cost and with a less complex billing structure.

e) Data/cable security. Opportunities exist for American companies with expertise in data and cable security. Australia has a strong market advantage for data warehousing, due to its low sovereign risk, given its relative geo-strategic isolation, and low risk of potential sabotage. Indeed, plans by IBM to install the "Pinnacle Blue" super-computer in Perth, Western Australia (which stalled recently due to a lack of state government funding) are testament to the safety of large-scale information installations in Australia.

4. Distribution channels; best market entry strategies

Distribution channels for telephony utilize existing telephony infrastructure and technology as present in most industrialized countries, including: fixed line, facsimile, email, voice-over-Internet and mobile phone services including text messaging, as well as wireless communications, dial-up and broadband internet services.

Market entry strategies. Best market entry strategies for new American players in the market would be to capitalize on the existing situation of over-servicing in the telecommunications market in Australia. According to industry sources, following privatization there has been a glut of new providers, and the current market is ripe for service provider consolidation. New players would do well to purchase or invest heavily in one of the better-performing local carriers, then plan acquisitions of rival companies, in order to gain maximum efficiencies of scale. Alternatively, new market entrants could act upon ongoing auctions of spectrum licenses – the most recent sales were made in 2002, and given the success of these sales, and the windfall to the government in terms of revenue from the sales, additional future sales can be expected. Such opportunities are advertised in the national media.

5. Barriers to entry

The predominant barriers for entry into the Australian market are issues relating to the financial viability of the market for new entrants. The total market size is not large – close to 20 million people, and the saturation of telephony services is high – 98% coverage for landline phones and 60% coverage for mobile phones. Liberalization of the market in 1997 from a previous situation of a monopoly through government-owned company, Telstra, has seen the entry into the market of several new carriers, including Optus (owned by Singtel), AAPT (Telecom NZ), Orange (Hutchison), Vodafone (UK-owned), Virgin Mobile (Virgin UK) and Primus (US-owned). Not all of the new competitors have thrived, as witnessed by the bankruptcy of local carrier "One Tel" in 2002. Other impediments relate to the cost of cable rollout for non-traditional telephony services, particularly to regional and rural Australia, given the large distances and high infrastructure costs. Another barrier worth considering in the home telephony market is the existing ownership of domestic land-line cabling and service by Telstra. When new service providers entered the home telephony market, many subscribers switched from Telstra, only to return once they realized that although the local call charges would be billed by the new provider, the rental of the line and servicing were still handled by Telstra. This resulted in two separate bills for their domestic accounts. These arrangements act as disincentives to new players in the home telephone services market.

6. Post's contact information

Ms Libby Black, Commercial Specialist
US Commercial Service
Address: 53 St Kilda Road, Melbourne VIC 3004
Tel: +61 3 9526 5972
Fax: +61 3 9510 4660
Email: libby.black@mail.doc.gov

CHINA

1. Market Overview

China's telecommunications market is the world's most dynamic market characterized by rapid growth and great potential for further development. Up till now, China owns the world's largest fixed line network with 218 million users and the largest mobile communications networks with 212 million cellular phone subscribers. However, the lower penetration rates of fixed line at 17.5% while mobile at 16.2% offer more room for further growth. In the past five years since 1997, China's telecommunications industry has registered an average annual growth rate of 20% and it continued the momentum of rapid growth despite of the downturn of the industry worldwide. Although the growth rate in 2002 was 6 percentage points less than the five-year average to be 14%, it is much higher than China's national economic growth rate of 8% in the year.

In 2002, Chinese telecom carriers invested USD25.4 billion in telecom infrastructure. With such an investment, they were able to recruit 95.45 million new telephone subscribers in the year. Their aggregated revenue reached USD55.36 billion. Among which, China Telecom has a share of 32.5%, China Netcom 16.6%, China Mobile 37.4%, China Unicom 12.1% and others 1.4%.

China's Ministry of Information Industry (MII), the most important government regulator in the telecommunications industry, projected that Chinese telecom carriers would invest USD25.5 billion in 2003 to recruit 33 million fixed line telephone subscribers and 52 million cellular phone users. MII expected the fixed line penetration rate to reach 19.4% by the end of year and cellular penetration rate 20.1%.

There are six licensed basic telecom service providers in China: China Telecom, which is allowed to provide all telecom services but mobile; China Netcom, all telecom services but mobile; China Mobile, all telecom services but fixed line; China Unicom, which is, to date, the only licensed full telecom service provider in China and the only CDMA operator; China Railcom, all telecom services but mobile; and Chinasat, which provides all satellite based services and other value-added services.

China has one of the world's most competitive telecommunications equipment markets. The explosive growth of the country's telecommunications networks long ago attracted the attention of all the major international equipment manufacturers and all have established joint venture manufacturing operations in China. Motorola, Ericsson, Siemens, Alcatel, Lucent, Nokia and Nortel are well known in China, and a growing number of Chinese firms have developed to compete with them. The Chinese government has fostered the development of Chinese manufacturers through a wide range of tariff and non-tariff barriers, and Chinese manufacturers now compete with foreign companies, not only in the Chinese market, but in third-country markets as well. Huawei, ZTE, Shanghai Bell, and Datang are among the better-known Chinese equipment manufacturing companies.

China's telecommunications equipment market is characterized by rapid growth, intense competition, and a multitude of complex, multi-layered, political and economic factors that must be carefully and successfully evaluated in order to achieve success. It is important to recognize that, while the Chinese government appears committed to foster a more competitive telecommunications service environment, this commitment does not necessarily mean that equipment vendors with the best technology and/or lowest prices will succeed in the Chinese marketplace.

As previously noted, MII is charged with promoting the development of an indigenous information and communications technology industry in China. Prior to its WTO accession, China maintained a number of explicit policies that were designed to limit the nation's dependence on foreign technology and protect China's nascent manufacturing industry. These included requirements for foreign vendors to establish joint ventures with Chinese partners and to build manufacturing facilities in China. Market access was usually conditioned on technology transfer - the higher the level of technology a foreign company transferred to its joint venture in China, the more market share it would be granted in China. Imports of

component parts to feed the factories in China would often have to be offset by exports of finished products from the factory.

The effect of these policies has been demonstrated in China's central office switching market. Prior to 1996, foreign suppliers and Chinese-foreign joint ventures were the dominant players in supplying central office switching equipment for China's network. By 1998, foreign vendors had seen their market position seriously eroded by Chinese manufacturers.

Broadcasting and CATV

China has over 470 million television sets in use. The national penetration rate is over 100%. However, this is due to unequal penetration across China. In large cities like Beijing and Shanghai, the penetration rate is over 150%. There are about 100 million cable television subscribers in China. Almost all of them are urban residents because the Chinese cable television operators have not yet expanded their businesses to the rural areas. All Chinese cities have their own broadcasting services. Because the Chinese government is sensitive about the content, it places strict control over television broadcasting services. Government approval is required to enter this market. The State Administration for Radio, Film and Television (SARFT) is the major regulator in this market, with content being approved by the Propaganda Department of the Central Party Committee of the Chinese Communist Party.

The key revenue generator for television service providers in China is advertisement. Inn China, cable TV subscribers only pay about $18 per year for receiving cable TV programs in Beijing. SARFT is encouraging broadcasting and television operators to launch pay TV, provide more value-added services in addition to advertisements.

China is now working on its digital television standard. It might come out in mid-2003. It is believed that the digital TV standard will be a mix of DVB developed by European companies and some contribution from a few Chinese universities. In 2002, China invested $85 million in the deployment of digital TV systems. To date, China is providing digital TV programs in 40 cities with an aggregated 170 channels. Digital TV subscribers reached 90,000 by the end of 2002. Guangdong, Jiangsu and Shandong are leading the country in Digital TV service. SARFT plans to launch 10 pay movie channels, several digital CATV programs and recruit one million set-top-box users. The number of pay movie channels is expected to be increased to 30 in 2004. By the end of 2005, China expects to have 50-80 pay movie channels, 150 digital TV programs and 30 million set-top-box users. In this market, U.S. firms are competing against the Europeans, Japanese, Israelis and local Chinese companies.

U.S. telecommunications equipment exports to China have risen at an average annual rate of 8 percent each year since 1993, reaching a peak of $1.1 billion in 2001. However, U.S. imports of these products from China grew more than twice as fast (19 percent) each year during this same period to $ 3.2 billion. By year-end 2002, U.S. telecommunications equipment exports fell sharply, losing over a third of their value, while imports from China increased by nearly $1.4 billion. These significant changes in trade have led to a steadily worsening U.S. telecommunications product trade deficit with this country.

2. Regulatory Regime

China does not yet have a Telecommunications Act in place. However, MII has promulgated Telecommunications Regulations and Regulations on foreign investment in telecommunications industry based on its WTO commitments. Under the WTO, China has made commitments in three areas:

1. Upon accession, key telecommunications services in Beijing, Shanghai and Guangzhou, which carry about 75% of all domestic traffic, will be immediately open to foreign competition. Foreign carriers will be permitted up to 25% ownership in mobile services and 30% ownership in value-added services.

2. All geographic restrictions for valued-added services will be phased out within two years of accession. Geographic restrictions on mobile services will be eliminated within five years and on domestic wireless services within six years.

3. Forty-nine percent (49%) foreign ownership will be permitted in mobile services within three years of accession in 17 major cities and within five years for all of China. Forty-nine percent (49%) ownership will be permitted for international and domestic fixed line services within six years and 50% for value-added services within two years.

MII requires that most of the telecom equipment including terminal devices as cell phones, phones and fax machines and network products like switches and base station equipment be tested and certificates will be issued to these products. There are two kinds of certificates: Type of Approval (TA) for radio products and telecom equipment network access license for all other products. MII's Radio Regulatory Department is authorized to conduct the testing of radio products and issue TA certificates while MII's Telecom Administration Bureau issues telecom equipment network access licenses.

Major government regulators are as follows:

Ministry of Information Industry (MII)

The Ministry of Information Industry (MII) is the principal regulatory agency for China's telecommunications industry. MII is subject to oversight by the State Council. The Ministry of Information Industry was created in March 1998 by merging the Ministry of Posts and Telecommunications with the Ministry of Electronics Industry (MEI). Wu Jichuan, who was Minister of Posts and Telecommunications at the time, became the new Minister of Information Industry. Former Party Secretary of Hebei Province, Wang Xudong, was appointed MII Minister in March 2003.

The Ministry of Information Industry (www.mii.gov.cn) is charged with a wide variety of responsibilities. As MII states in its 2001 Annual Report, "the Ministry of Information Industry is a regulatory body in charge of the manufacture of electronic and information products, communications and the software industry, as well as the promotion of informatization of the national economy and social services in the country." Its many duties include the development and management of China's communications networks as well as the nation's telecommunications and information technology equipment manufacturing industries. MII is responsible for developing equipment standards, allocating spectrum, managing satellite orbital slots, developing tariff rates for telecom services, managing emergency and disaster relief related communications systems, and managing the telecommunications numbering system and Internet domain name registration, among other duties.

MII's responsibilities occasionally conflict and may preclude the Ministry from functioning as a truly independent regulator. Its responsibility to foster the development of China's IT and telecom equipment industries, for example, can result in MII applying pressure to network operators to purchase Chinese-manufactured equipment rather than imported equipment.

State Administration for Radio, Film and Television

The State Administration for Radio, Film and Television (SARFT) is responsible for overseeing the operation of China's radio, film and television operations. This includes licensing radio and television broadcast stations, film distribution, and the country's cable television networks. SARFT is also responsible for monitoring the content that is distributed via these media. SARFT has sought to expand the capabilities of cable television networks to provide Internet access and telecommunications services. These efforts have brought it into conflict with the Ministry of Information Industry, which claims to be the only entity authorized to issue licenses for telecom and Internet service provision. Conversely, MII has indicated an interest in licensing radio and television networks, while SARFT has opposed such efforts. It is expected that the State Council will determine the future rights and responsibilities of each ministry, and ultimately, the future of the convergence of the various services.

Other Government Agencies that have influence on the industry: There are at least ten Chinese government bodies influencing the development of the IT sector in China. Many of these agencies have broader responsibilities beyond the information and communications technologies and Internet sectors, but the brief descriptions below are limited to their relationship to the ICT industry.

Ministry of Science and Technology (MoST) – The Ministry of Science and Technology is responsible for developing national policies for science and technology development, supporting the commercialization of new technologies, promoting technology innovation, and administering China's high-tech programs, such as the Torch and Spark Programs. Like MII, MoST also has science and technology offices throughout the provincial and municipal regions that report to both the local government and to MoST in Beijing.

State Council Informatization Office (SCITO) - The State Council Informatization Office (SCITO) was set up in August 2001 as an inter-agency coordinating body to oversee China's regulatory and commercial developments in the information technology and telecommunications sectors and implement the central government's policies and measures that drive informatization. In this capacity, SCITO directs and supervises all relevant ministries that affect these developments. This office is the executive body for the State Informatization Steering Group headed by Premier Zhu Rongji. The Steering Group focuses on policy planning, applications promotion and network security. Its chair is Zhu Rongji and five vice-chairs are Hu Jintao, Li Lanqing, Wu Bangguo, Ding Guan'gen, and Zeng Peiyan. SCITO also has municipal level informatization and IT offices throughout China that focus on implementing informatization programs.

Ministry of Public Security (MPS) – The Ministry of Public Security is responsible for security of computer and communications networks. The Ministry also regulates the development and sale of network security products and encryption technologies in China. The local bureaus of MPS, referred to as Public Security Bureaus, control the distribution of "harmful" content by cracking down on Internet Service Providers as well as Internet cafes.

State Development Planning Commission (SDPC) – SDPC was created in 1998 as an outgrowth of the State Planning Commission. SDPC develops policies to stimulate China's economic and social development, formulates pricing policies, and approves all major IT projects. SDPC officials also drafted China's Tenth Five-Year Plan, which serves as the blueprint for China's economic and social development from 2001to 2005 (see section on Tenth Five Year Plan for more details on China's IT-specific goals).

State Economic Trade Commission (SETC) – SETC is responsible for assisting in the restructuring and reform of state-owned enterprises and approving the establishment of trade associations in China. In addition, SETC has an office focused on providing assistance to small- to medium-sized enterprises (SMEs) and promoting informatization among SMEs in rural and urban regions of China.

Ministry of Foreign Trade and Economic Cooperation (MOFTEC)'s E-commerce Administration Department – MOFTEC's e-commerce office is responsible for coordinating e-commerce regulations and policies throughout the Chinese government. For example, MOFTEC is responsible for drafting China's e-signature legislation. MOFTEC's E-commerce office represents China in the Asia Pacific Economic Cooperation (APEC) E-Commerce Steering Group (ECSG) and China's interests on e-commerce issues within multinational forums. MOFTEC's WTO office is also the inquiry point for China's WTO compliance efforts.

MOFTEC and SETC merged to become China's Ministry of Commerce (MOC) in March 2003. MOC will have most of the functions of these two ministries and some of the functions of SDPC.

3. Best Prospects

Best sub-sector prospects within this sector include the following: mobile and value-added capabilities for e-mail and web browsers and the ability to download ringing tones, logos/images, music, videos, games, stock market quotations, etc.; Wireless Access Network equipment including Wireless LAN, LMDS; ADSL; operational management systems like BOSS; multiple service platforms; Digital TV systems and related products like digital programmers, set-top-box, and testing instruments. With the changes agreed for the mobile market under the WTO, US carriers and value-added providers should have good opportunities in the Chinese telecommunications market in future.

4. Distribution channels; best market entry strategies

In telecom sector, all the Chinese telecom carriers have adopted a two-layer purchasing structure., e.g. only the company headquarters and their provincial branches have decision-making power on equipment procurement. The headquarters determine the purchasing of equipment that affect the network as a whole while the provincial branches are only allowed to buy products needed for their local sections of the network. Testing of the products by the carriers is a must even if these products will be sold to local operators. Larger vendors are advised to work directly with the carriers to sell their products while smaller firms may want to start with agents and distributors that have the necessary resources, for instance, necessary connections and technical support.

In broadcasting field, each carrier makes its own procurement decision. Vendors are able to sell directly to end-users. However, because of the complexity in this sector, foreign vendors usually use resourceful distributors and agents, or team up with local companies to explore business opportunities.

5. Barriers to entry

China has agreed to wide-ranging reforms affecting trade in goods through its accession to the World Trade Organization (WTO). These changes should result in better access for foreign suppliers to the Chinese market by eliminating various trade-restrictive requirements and incentives that favored domestic Chinese-manufactured goods. Below are some of the changes that will affect the telecom and IT sectors. See the overview chapter (Chapter 1) for a more detailed discussion on the impact of China's WTO membership on IT and telecommunications products.

Tariffs: China agreed to sign on to the Information Technology Agreement (ITA) on accession, thereby committing to eliminate tariffs on all products covered by the ITA. Tariff reductions from its previous applied average of 13% were initiated upon accession. Tariffs on two-thirds of the ITA products were eliminated by January 1, 2003, and tariffs on all the remaining products will be eliminated by January 1, 2005.

Local Content: China agreed to eliminate local content requirements immediately after accession to the World Trade Organization and not to enforce provisions in existing contracts that impose this requirement.

Technology Transfer: China will eliminate technology transfer requirements and offsets as a condition for investment approval or importation. The terms and conditions of any transfer of technology will be agreed between the parties to a contract and not imposed by the government.
Exports from the United States will no longer face this barrier, and companies that want to invest in China can negotiate these terms without interference from the Government of China. China will also have to provide better intellectual property protection for technology that is transferred and eliminate requirements mandating that the Chinese partner in a joint venture gains ownership of trade secrets after a certain number of years.

Testing and Certification: Testing and certification have caused much more concerns from telecom manufacturers. Chinese requires TA, equipment licensing and safety certificates (CCC mark by AQSIQ). Vendors have to deal with three different organizations to complete the process. It slows down vendors' response to market needs and delays delivery time in some cases. This is now one of major concerns of manufacturers.

6. Post's contact information

Michael (Jianhong) Wang, Senior Commercial Specialist
US&FCS Beijing, China
31st Floor, North Tower, Beijing Kerry Center
1 Guanghua Road, Chaoyang District
Beijing 100020, China

Tel: 8610 8529-6655 ext 865
Fax: 8610 8529-6558/9
Email:jianhong.wang@mail.doc.gov

HONG KONG

1. Market Overview

3G licenses for mobile phones

On mobile communications, four 3G licenses were awarded in 2001. The Office of Telecommunications Authority (OFTA), Hong Kong's regulatory body, adopted a hybrid approach to the licensing process, which included a pre-qualification exercise followed by an auction. During the auction, prospective licensees were supposed to bid for the four available licenses based on the percentage of annual revenue to be paid to the Government as a royalty during each of the 15 years of the period of validity of the license.

It was thought that the adoption of this hybrid approach would be fairer on the licensees than the requirement to pay a lump sum amount for spectrum up-front. There were only four qualified bidders and the auction never took place. The four licenses were issued to operators subject to the payment of royalties on revenue at the minimum percentage and amounts. The licensees were then required to bid for specific bands of the available spectrum, which ultimately netted the Government an additional amount of just HK$4.09 million. (US$1=HK$7.8)

The four licensees, namely Hong Kong CSL Limited, Hutchison 3G Limited, SmarTone 3G Limited and Sunday 3G (Hong Kong) Limited, were issued radio communications spectrum in the 1.9 – 2.2 GHz band to be used for providing 3G services and were the first mobile operators to be issued mobile carrier licenses. The mobile carrier licenses issued to the four licensees contained the standard general conditions for carrier licenses, together with special conditions imposing the Open Network Access ("ONA") and Network Rollout obligations.

Several operators have launched GPRS ("2.5G") networks, but a relatively low demand from subscribers for this technology reflects broadband data applications' shortage, and indicates that there is potential expansion market for broadband mobile phones.

Due to low tariffs for broadband internet connections and its high population density, Hong Kong is suitable for WLAN deployment. The most popular standards are the variants of IEEE 802, known as Wi-Fi, Bluetooth and HomeRF. Current WLANs typically provide 11 Mbps, and higher bandwidths will soon be available. The main application for wireless LANs is internet access.

Fixed Lines Decline

Fixed telecommunications lines will continue to be indispensable, although mobile phones have taken a large share of voice traffic. There are about 3.9 million business and residential phone lines in Hong Kong and the number has fallen slightly from its peak in 2000.

Fixed line competition, which nominally commence in 1995, was mainly restricted to the business market previously, due to the dominant position of the incumbent carrier- PCCW. However, full liberalization of FTNS services commenced on Jan 1, 2003, eliminating the limit of the number of licenses. A major effect of fixed line competition is the continuing reduction in IDD rates. These have fallen from HK$12/min in 1990 to under 50 cents in 2002.

Broadcasting

On the broadcasting front, a new broadcasting ordinance regulates separately the transmission networks and broadcasting service providers. Broadcasting services are not regulated by their transmission

modes, but in accordance with pervasiveness and influence to the society. Subject to the appropriate licensing arrangements, transmission networks will not be artificially restrained in their capability to carry broadcasting telecommunications or multimedia services.

2. Regulatory Regime

A number of significant developments in the regulation of the Hong Kong telecommunications market took place in 2002. On 11 January 2002, OFTA issued a statement containing the final details of its plan for the implementation of liberalization based on industry responses to the Liberalization Consultation Paper. In summary, the key implementation details included the following:

- From 1 January 2003, the local and external FTNS markets will be fully liberalized and there will be no pre-set limit for the number of licenses for the operation of local wireline-based fixed networks;

- There will be no rollout or capital expenditure commitments required from licensees of local wire-line based fixed networks and/or external facilities that are licensed to operate from 1 January 2003;

- OFTA will not consider granting any fixed carrier licenses to operate local wire-line based fixed networks to those applicants who intend to rely primarily on the interconnection with, and access to, the infrastructure of other operators or fixed carrier licensees to roll-out their networks or provide their services; and

- Newly licensed local wireline-based fixed network operators will, on a case-by-case basis and subject to certain conditions, obtain rights for access to buildings and road opening under section 14(1) of the Telecommunications Ordinance.

3. Best Prospects

- Broadband, a term applicable to any high-speed interactive communications service, whether through a cable TV connection, a wireless link or a traditional telephone line, has become the focus of investment.

- The mobile industry is shifting towards providing not just voice but high-speed data/image transmission services. 2.5/3G mobile services will be able to access the Internet and accelerate the growth of mobile-commerce, which would account for more than 10% of e-commerce in three years time. According to International Data Corp, Asia-Pacific m-commerce, excluding Japan, is projected to become a US$ 12.4 billion market by 2005 from an estimated US$ 557 million in 2001.

- Wireless data application such as Short Message Service (SMS), Enhanced Message Service (EMS) and Multi-media Message Service (MMS) will become an important function in mobile communication. According to GSM Association, around 10 billion SMS messages a day were sent worldwide by the end of 2001.

4. Distribution channels; best market entry strategies

Appointing agents and distributors and finding joint venture partners are the most common channels

5. Barriers to Entry

From Jan 1, 2003, the local and external FTNS markets were fully liberalized and there will be no pre-set limit of the number of licenses for the operation of local wireline-based fixed networks.

6. Post's contact information

Alice Lai, Commercial Specialist
American Consulate General
US Commercial Service
26 Garden Road, Central
Hong Kong
Tel: 852-2521-4638
Fax: 852-2845-9800
Email: alice.lai@mail.doc.gov

INDIA

1. Market Overview

India's 48 million-line telephone network is among the top 10 networks in the world and the second largest among the emerging economies, after China. India has one of the fastest growing telecommunications systems in the world, with system size (total connections) growing at an average of more than 20 percent per annum over the last 4 years. The industry is considered as having the highest potential for investment in India. The growth in demand for telecom services in India will be highest in the basic, followed by national long distance, international long distance and the cellular services sector.

Fixed-line services: The government has issued 27 licenses for 22 circles. There is no restriction on number of players in each circle. There is a one time entry fee, depending on the circle, it varies from $ 210,000 to $ 22 million. The fixed line license providers can also provide basic telephony using CDMA technology (limited mobility). At present four companies are offering CDMA service and the current subscriber base is 1 million (service started in December of 2002).

Domestic long distance (DLD)/ National Long Distance (NLD): DLD has been opened up for private participation and three companies have obtained the licenses. As per the guidelines, announced on August 15, 2000, the total foreign equity in a DLD company must not exceed 49 per cent. International long distance has also been opened; industry estimates the market for international long distance to grow from US $ 2.7 billion in 2003 to US$ 5 billion in 2005. DLD is expected to grow from $ 6 billion in 2003 to $ 9 billion in 2005

Cellular: In 1992, the Government decided to open provision of Cellular Mobile Telephone Service for private participation. India adopted the Global System of Mobile Communication (GSM). Today, India has 25 private companies providing cellular services in 20 telecom circles and 4 Metro cities. There are six telecom slots available for providing cellular mobile telephone service. The subscriber base at present is approximately 11 million and is expected to reach 50 million by 2005.

2. Regulatory Regime

Three bodies manage India's telecommunications regulatory system:

a. The Telecom Commission (TC)
b. The Department of Telecommunications (DoT);
c. The Telecom Regulatory Authority of India (TRAI)

The three bodies have a framework of nominally independent authorities with checks and balances designed to separate the formulation of policy from the licensing authority, and the regulation of tariffs and interconnection.

The TC is responsible in formulating policy of the DoT for approval of the Government of India (GoI). The TC holds control over the budgetary allocation and disbursement of the state-owned telecom service and manufacturing companies, including the service providers (BSNL, MTNL) and equipment providers (Indian Telephone Industries, Telecommunications Consultants India Limited and Hindustan Teleprinters Limited). The TC consists of five members: a Chairman and one member of each for Services, Finance, Technology and Production).

The DoT functions as a policy maker, licensing authority and performs research and development and training functions.

Telecom Regulatory Authority of India (TRAI) is responsible for facilitating interconnection and technical interconnectivity between operators, regulating revenue sharing, ensuring compliance with license conditions, fixing telecommunications tariffs, facilitating competition and settling disputes between service providers.

Telecom Dispute Settlement Appellate Tribunal has been set up to settle disputes between service providers, between licensor and service providers and also between consumers and service providers.

3. Best prospects

India has a relatively low tele-density of 4 per 100 persons, with plans of increasing to 7 by 2005 and 15 by 2010. Tele-density in India rural areas is 0.5 per 100 people and the government plans to increase this to 4 per 100 by 2010. A total of 500,105 out of 607,491 villages have been provided with village public telephone (VPT), i.e. one telephone per village. Considering India's population of 1 billion, it is estimated that for achieving these objectives, approximately 78 million telephone connections will be required by the year 2005, and 175 million telephone connections by the year 2010. At current prices, this translates to an additional investment of approximately US$37 billion by 2005 and US$ 68 billion by 2010.

The United States has a large share of foreign direct investment (FDI) in the Indian telecom sector. Out of the total FDI of US$ 927 million invested in the telecom sector between 1993-2000, Mauritius (holding companies) have a share of 65 percent followed by U.S. companies: 8.5 percent; and Thailand: 3.98 percent. Approximately 48 percent of the FDI has been in the cellular mobile
Telephone service.

The installation base of direct exchange lines (DELs) was at 37 million DELs by 2002 and is expected to grow to 82 million DELs by 2007. Of the additional DELs, DoT/ MTNL will provide about 80 percent of DELs. It is estimated that each DEL will cost about US$ 900.

Rural connectivity continues to be on the government's priority list. The government expects about 10 percent of all connections provided by the private sector to be in the villages. To improve long distance connectivity, a target of creating additional 1.8 million lines of telephone exchanges is also proposed. The new policy envisages a crucial role of the private sector in development of the telecom industry and to meet its targets. The targets are: setting up of 0.14mn route kilometers of optical fiber system, public call offices (PCO), station trunk dialing – domestic long distance (STD) PCO for every 10 km of national highway, broad base STD facilities and digitalization of all exchanges.

4. Distribution channels; best market entry strategies

India has both organized and unorganized (or traditional) channels for selling goods. Smuggled goods such as food items, computer parts, cellular telephones, gold and a vast range of imported consumer goods are routinely sold through the thriving "unorganized" sector or black market. By avoiding taxes and customs duties and using cash transactions, unorganized merchants offer better prices than those offered by the organized sector. However, with liberalization and more and more foreign companies coming to India, the volume of business in smuggled goods has fallen significantly. Most products being sold

through the smuggled channel previously are now sold in India through direct channels. Some of the common distribution channels are:

Distributor: When a company wants to sell its products or services in India, before establishing a branch office or a subsidiary, it can enter the market by appointing a representative or a distributor. If the product has a wide market appeal, it would be appropriate to appoint representatives/distributors by region.

Joint Venture: A joint venture company is generally formed under the Indian Companies Act, and is jointly owned by an Indian company and a foreign company. This type of arrangement is quite common because India encourages foreign collaborations to facilitate capital investments, import of capital goods and transfer of technology.

Liaison office: Many U.S. companies initially establish a presence in India by establishing a liaison or representative office that is not directly engaged in commercial transactions in India. Foreign companies usually open representative/liaison offices to oversee their existing business interests, to promote awareness of their products and to explore further opportunities for business and investment. A Liaison office is not allowed to undertake any commercial activity and cannot therefore earn any revenue in India.

Subsidiary company: Like a liaison office, is not an incorporated company but an extension of the foreign company in India. A branch of a foreign company is limited to the following activities by the RBI: representing the parent company, as buying/selling agent; conducting research for the parent company, provided that research results are made available to Indian companies; carrying out import and export trading activities; promoting technical and financial collaborations between Indian and foreign companies, rendering professional or consulting services, rendering services in Information Technology and development of software in India, and rendering technical support to the products supplied by the parent/group companies.

5. Barriers to entry

India's tariffs are still high by international standards. The peak tariff rate was reduced to a ceiling (with a few exceptions) of 25 percent in the last fiscal budget. The GoI permits a maximum of 49 percent for FDI in the telecom sector.

6. Post's contact information

Sandeep Maini (telecom and IT sector)
Shantanu Mitra (broadcast sector)
U.S. Commercial Service
American Center, 24 Kasturba Gandhi Marg
New Delhi 110 001, India
Tel: 91-11-23316841; Fax: 91-11-23315172
Email: Sandeep.Maini@mail.doc.gov; Shantanu.Mitra@mail.doc.gov

INDONESIA

1. Market Overview

Indonesia faces many challenges in developing a telecommunication infrastructure. It has the fourth largest population in the world (210 million), which is spread out over thousands of islands. Indonesia's current teledensity is approximately 3.6 lines per hundred people, which is very low compared to other Asian countries.

The telecommunication sector in Indonesia has been growing rapidly since 1993. In 1992, the entire country had only 1.5 million installed telephone lines installed, representing a telephone density of 0.83 per 100 population. To stimulate development and to make the country more competitive, in 1993 the Government of Indonesia embarked on an ambitious telecommunications program. About 3.1 million additional telephone lines were installed between 1993 and 1997, increasing the country's density to 2.51 per 100 people.

The cellular market in Indonesia has seen spectacular growth over the past two years. The market is potentially lucrative as demand for mobile phones continues to grow at a remarkable rate of 2 million subscribers annually. However, the market penetration rate still remains the lowest in the Asia Pacific region at around 5.2%. In 1997, only about 1 million Indonesians were cellular subscribers; in 2001 the number grew to 5.7 million. By the end of 2002 there were 11 million subscribers, surpassing the fixed phone line market, which stood at 7.6 million at the end of 2002. Indonesia's mobile-phone market penetration rate is expected to reach 13.6% by 2005. In 2002 the total revenue for cellular market was $1.17 trillion, and is estimated to reach $2.2 trillion in 2003.

Indonesia's mushrooming television stations are entering an era of fierce competition. Several new stations have emerged, and even several regions now have their own local television. In the last two years, five new television stations have been set up with national broadcasts, 15 regional television stations have expressed readiness to start their trial broadcasting. Presently, there are 11 television networks operating in Indonesia: TVRI, RCTI, TPI, Anteve, Indosiar, Metro TV, Trans TV, TV-7, Lativi and Global TV.

Television has been the best medium for national coverage, reaching the most consumers in all cities in Indonesia. In 2002 the advertising spending on television was estimated at $800 million. The market outlook for television industry is good, but it will be competitive, especially in advertising. Only one cable-TV license has been granted so far, for Jakarta, the capital city. Indonesians also watch national programs, besides the many international video channels, through satellites owned by offshore or Indonesian companies.

2. Regulatory Regime

The telecommunication sector plays an important role in supporting Indonesian's economic growth. The Indonesian Government has started to liberalize gradually the telecommunications sector by restructuring the industry and by allowing foreign telecommunications companies to enter the market. The introduction of the Telecommunications Law No. 36 in 1999 to liberalize the sector, and Presidential Decree No.6 in 2001, instructing various government entities to further use and develop the information technology sector, have shown that the government has strong intentions to develop the telecommunications industry. In August 2000, the GOI announced that the monopoly by major operators in Indonesia - PT Telkom (local and domestic long-distance carrier) and PT Indosat (international carrier)-both state-owned enterprises--was terminated. PT Telkom's exclusive right in operating local and domestic long-distance fixed lines was terminated in August 2002. PT Indosat will lose its exclusive rights in operating international services in August 2003.

In order to strengthen the implementation of 2001 Decree No.6, President Megawati's administration established a new State Ministry of Communications and Information to oversee the development of broadcasting, mass media and information technology content. The new Ministry is focusing on the development of e-government strategies and coordinating standards setting not for national and for regional government agencies.

There have also been serious discussions and workshops regarding the possible establishment an Independent Regulatory Body (IRB) in the Indonesian telecommunications sector. The development of an Indonesian IRB is mainly driven by the Indonesian Telecommunication Society (MASTEL). MASTEL, supported by 15 associations in the information and communications sector, has 48 corporate members,

179 individual members and also members that come from non-profit organizations. It is believed that IRB will further support the industry's growth.

3. Best prospects

In an effort to enhance its telecommunication infrastructure, PT Telkom plans to build 1.65 million fixed-wireless lines nationwide using the Code Division Multiple Access (CDMA 2000-1X) technology. This project is scheduled to commence in 2002 and complete in 2005. Motorola, Ericsson and Samsung have been awarded tenders to build the CDMA 2000-1X fixed-wireless networks nationwide.

The cellular providers plan to invest approximately $1 billion in 2003 to upgrade systems, expand and enhance networks to copy with demand of cellular subscribers. The expansion networks will include installation of new base transceiver stations (BTS), radio base stations, power supply, supporting facilities, supporting transmissions, migration from AMPS to CDMA system.

4. Distribution channels; best market entry strategies

There are a number of factors in the successful marketing of telecommunications equipment in the Indonesian market:

1. Quality - Most end users consider quality the most important factor, as it directly effects the performance of the telecommunications system. The equipment offered should be highly accurate, reliable, durable, easy to operate and maintain.

2. Geographical Coverage - Given the wide geographical spread of Indonesia - the world's largest archipelago - and the widely dispersed locations of stations and sub-stations, distribution channels are particularly important. This applies not only to the sale and transportation of new equipment, but also, more importantly, to after-sales support services. End-users value after-sales support services second only to quality. Suppliers must also have a readily available inventory of vital spare parts. Delivery time should meet expectations and not exceed the customary average of two to three months.

3. Marketing Techniques - U.S. suppliers hoping to enter this market are advised to take care in selecting an agent thoroughly familiar with the product and prospective buyers. The prime target segment of the Indonesian telecommunications market is infrastructure. Decisions on infrastructure development are usually made by the government and implemented by PT Telkom or PT Indosat. It is therefore vital that the local agent be able to meet the terms and requirements of these two state-owned companies. This ability certainly requires strong support from the U.S. principals. Thus, U.S. suppliers must spend much time and effort studying and selecting the most suitable local agents or partners.

5. Barriers to entry

There are no market barriers for telecommunications products. Tariffs range from 0 to 15 percent. Effective January 1, 2002, Indonesia, along with its regional partners, fully implemented the ASEAN Free Trade Agreement (AFTA). Indonesia has now reduced tariffs for all products included on its original commitment (7,206 tariff lines) to five percent or less for products of at least 65 percent ASEAN origin. The government will reduce rates on 66 remaining tariff lines, mostly in the chemicals and plastics sectors, to the 5 percent AFTA ceiling by 2003.

For sales to the Government, Indonesian agents must be used, and the agents are encouraged to have a direct relationship with the foreign supplier rather than be a sub-agent of a Singapore (or similar outside) regional firm. Traditionally, Indonesian importers do not specialized in particular product lines, but instead handle a wide range of products.

PT Telkom, the largest consumer of telecommunications equipment in the country, procures its equipment through both direct imports from the manufacturer and through a local agent. Large-scale

orders or the purchase of high-tech systems, which usually come as package deals, are directly imported. Local agents are used only for small orders or for the procurement of accessories and peripherals. In the latter case, suppliers are selected through open-competitive bids. For each of its projects, PT Telkom has a policy to use a minimum of two brands.

All telecommunications equipment to be marketed in Indonesia has to meet the technical standards of and be approved by PT Telkom in regard to quality, reliability and safety. Telkom's Calibration and Quality Assurance Laboratory of the Research and Information Technology Support Division in Bandung, West Java, set these standards. This is the only official institution in the country that issues Type Approval Test Certificates and Quality Assurance Test Certificates for all telecommunications systems and equipment. This lab, besides being a member of the National Calibration Network, operates in accordance with the special ISO prerequisite for calibration. International standards, such as ITU-T, CCITT, IEC, ASTM, JIS, etc. are used as references in formulating the local standards.

Protection of intellectual property rights (IPR) in Indonesia is hampered by inadequate enforcement of the relevant laws and regulations. Problems in IPR protection raised by industry include: rampant software, audio, and video disk piracy; pharmaceutical patent infringement; apparel trademark counterfeiting; an inconsistent and corrupt law enforcement regime, and an ineffective judicial system. The lack of effective IPR protections and enforcement serves as a considerable disincentive for foreign investment in high technology projects in Indonesia. The Indonesian court system can be frustrating and unpredictable, and effective punishment of pirates of intellectual property is rare. Foreign companies therefore must be vigilant and creative in building strategies to protect their products from infringement.

Foreign rights holders often work with local law firms and security consultants to arrange for police raids on counterfeiters. Others conduct periodic seminars on the adverse effects of IPR infringement on the Indonesian economy, one of which is reduced investment by foreign companies.

Ultimately, the course taken by companies to protect intellectual property rights will depend on the product. As an example, one U.S. company first identifies the counterfeiters of its products and then proceeds to work with them and sign them as legal licensees of its products. Some computer software companies provide free training and/or sell their software at competitive prices, while warning that copies of their product may contain damaging viruses. Also, companies with well-known trademarks seek to defend themselves by registering them early or seeking a cancellation of an unauthorized registration through the Ministry of Justice. In general, acquiring a strong local partner or agent can help in defending trademarks and intellectual property, as long as the arrangement remains amicable.

6. Post's contact information

Kalung Riang, Commercial Specialist
U.S. Commercial Service
Wisma Metropolitan II, 3rd Floor
Jl. Jendral Sudirman Kav. 29-31
Jakarta 12920, Indonesia
Tel: (62-21) 526-2850
Fax: (62-21) 526-2855
E-mail: kalung.riang@mail.doc.gov

JAPAN

1. Market Overview

The Ministry of Public Management, Home Affairs, and Posts and Telecommunications (MPHPT) announced on February 28, 2003 that broadband users in Japan exceeded 830 million as of the end of

January 2003. The broadband users include people who use xDSL, CATV and FTTH (Fiber To The Home), which were respectively 5.64 million, 206,000, and 7.8 million. This widespread accessibility of broadband continues to facilitate the use of other applications such as IP telephony.

FTTH subscribers numbered only 12,337 at the end of January 2002, but jumped to 233,072 in the ensuing year. As the subscription fee for FTTH service decreases gradually, xDSL users are expected to transfer to FTTH service. Forecasters believe that the number of subscribers will increase rapidly over the next five years. FTTH dissemination may depend on the availability of internet services that require faster access. For the time being, xDSL plays a key role for broadband access from home.

Broadband Users

	Dec. 2000	Jun. 2001	Dec. 2001	Jun. 2002	Dec. 2002	Jan. 2003
DSL	9,723	291,333	1,524,564	3,300,926	5,645,728	6,119,883
FTTH	--	--	--	68,600	206,189	233,072
CATV	625,000	967,000	1,303,000	1,626,000	1,954,000	1,992,000
Total	634,723	1,258,333	2,827,564	4,995,526	7,805,917	6,119,883

(Source: MPHPT)

Telecommunications Equipment Market (million USD)

	2000	2001	2002 * (**)
Import Market	5,143	4,207	3,237 *(2,728)*
Local Production	36,671	31,407	22,038 *(18,365)*
Exports	8,014	5,791	4,020 *(3,350)*
Total Market	33,800	29,824	21,255 *(17,743)*

(Source: Communications Industry Association of Japan)
(*: unofficial estimate by US&FCS, **: actual figure from January to November, 2002)

Facility Investment (billion USD)

	2000 (Actual)	2001 (Actual)	2002 (Plan)
Telecom Industry	39.49	26.43	24.46
Telecom Carrier	36.44	23.83	21.28
Type I	32.61	21.48	18.90
Type II	3.83	2.34	2.38
Broadcasting	3.05	2.60	3.18
Private	1.27	1.11	1.49
Cable TV	1.05	0.88	1.04
NHK	0.73	0.61	0.65

(Source: MPHPT)

2. Regulatory Regime

Japan has two regulations relating to technical standards of telecommunications equipment: the "Telecommunications Business Law (TBL)" and the "Radio Law". Each of them stipulates technical standards for telecommunications equipment. TBL is designed to ensure reliable and stable telecommunications services and covers the equipment owned by carriers and the terminal equipment to be connected with the line facilities owned by carriers. The Radio Law is designed to ensure fair and

efficient utilization of radio waves, and covers equipment using radio waves and is predicated on the issuance of licenses for radio stations. Telecom carriers need to acquire confirmation of compliance with technical standards of the TBL from the MPHPT for their equipment. Wireless equipment and mobile phones also have to comply with technical standards of the aforementioned two laws.

Japan Approvals Institute for Telecom Equipment (JATE) is the Government of Japan authorized institute that certifies telecom terminal equipment connected with PSTN (public switched telephone networks). The Telecom Engineering Center (TELEC) is the Government of Japan authorized radio terminal equipment inspection institute. Any radio terminal equipment including PHS and cellular hand-held terminals must obtain TELEC certification. The criteria for certification is "no interference with other radio equipment".

Japan Approvals Institute for Telecom Equipment (JATE)
Address: 1-1-3 Toranomon, Minato-ku, Tokyo 105-0001
Tel: 81-3-3591-4300; fax: 81-3-3591-4355
Homepage: http://www.jate.or.jp/index_e.html

Telecom Engineering Center (TELEC)
Address: 5-7-2 Yashio, Shinagawa-ku, Tokyo 140-0003
Tel: 81-3-3799-9034; fax: 81-3-3799-9054
Homepage: http://www.telec.or.jp/ENG/Index_e.htm

3. Best prospects

Networking equipment such as Layer 2 switches, Layer 3 switches, xDSL's access multiplexers and modems, WDM equipment and media converters, IP-PBX, VoIP gateway, IP telephones and load balancers and wireless LAN related products.

4. Distribution channels; best market entry strategies

In Japan, formal trade barriers such as tariffs are almost non-existent for telecom equipment. However, U.S. companies are more likely to find attitudes and customer education more formidable barriers than outright exclusionary practices. Japan has a notoriously risk-averse business culture; it is sometimes only half-jokingly referred to as "the land of no second chances." Accordingly, both businesses and consumers prefer well-known, well-established companies with well-established track records – this can make doing new business in new areas with new technologies problematic. Therefore, it is essential to find the right partners, or to establish a presence in Japan in order to navigate these hurdles and to begin establishing your reputation.

5. Barriers to entry

None. Japan's telecom equipment market is very competitive with world-class domestic manufacturers willing to engage in often severe cut-throat price competition. The Communications and Information Network Association of Japan (CIAJ), a telecom manufacturers' association, has about 200 members, including leading Japanese manufacturers such as NEC, Fujitsu, Oki and Hitachi. Most major European and North American telecom equipment suppliers also have offices in Japan.

6. Post's contact information

Address: 1-10-5 Akasaka, Minato-ku, Tokyo 107-8420
Fax: 81-3-3589-4235; Homepage: http://www.csjapan.doc.gov/

Commercial Service, U.S. Embassy, Tokyo contacts:

Manabu Inoue, Commercial Specialist
E-mail: manabu.inoue@mail.doc.gov,
Tel: 81-3-3224-5062

Joel Fischl, Commercial Attaché
E-mail: joel.fischl@mail.doc.gov
Tel: 81-3-3224-5088

KOREA

1. Market Overview

Market for Telecommunications Services, Equipment, and Software/Solutions

The overall Korean market for telecommunications equipment, services, software and solutions is valued at an estimated U.S. $ 71 billion for 2003 with an estimated annual growth rate of 8-10 percent. The market demand for equipment is valued at an estimated U.S.$ 16.3 billion; services, 28 billion; and software/solutions, U.S. $16 billion. Among the best prospects for U.S. exporters are telematics solutions, handsets, and components; next generation network equipment and solutions (WLAN, 4G, and home networking); e-commerce solutions (mobile internet, mobile commerce, and security); and VoIP (Voice over Internet Protocol) solutions.

Korea ranks among the top countries in the world in terms of Internet usage and broadband penetration. Korea's market for high-speed Internet access services, valued at approximately USD one billion in 2000, continued to grow at explosive rates and reached USD two billion in 2001. The size of the wireless Internet market was only USD 500 million in 2001, but is forecast to reach nearly USD one billion in 2002 and USD three billion by 2005. To accommodate projected increases in Internet usage and broadband demand, Korea's high-speed infrastructure is still growing and should be completed by 2005. By the end of 2005, the average Internet access speed in Korea will be 26 Mbps, requiring more advanced technologies and services for next generation networks including, DSL, cable modem, LAN and the satellite Internet. The anticipated explosive growth in demand for telematics services over the next few years is sparking strong demand for related equipment, handsets, components and software/solutions.

Korea's global leadership in wireless communications and broadband Internet access services has spawned tremendous demand for all types of software, especially for specialized and innovative technologies, providing opportunities for sales of advanced and highly specialized U.S. telecommunications software solutions. Technological advancement in Korea's software sector is still behind that of the U.S. and Japan, a result of Korea's relatively recent computerization and an acute shortage of highly qualified software specialists. Korea's SI companies and software developers are actively trying to develop partnerships with global leaders in every segment of IT services and solutions to deliver total solutions to clients in a time-to-market manner and to target the domestic and global market at the same time.

The overall market demand for packaged software has been growing in relation to the development of Korea's advanced IT infrastructure and related services in the e-commerce and telecom segments and will continue to grow at an average annual rate of 20 percent for the next three years. The fact that the Korean government has increased efforts to strengthen its IPR protection and enforcement through the Computer Program Protection Law (CPPL) has also contributed to the strong growth in demand for both Korean and imported packaged software. U.S. suppliers will continue to enjoy the competitive advantages of strong project management and marketing skills, compared to Korean firms and third-country suppliers. U.S. suppliers' willingness to modify their software slightly to meet specific user needs is a critical factor in end-user purchasing decisions. Although U.S. software is considered superior, Korean end-users, more often than not, will avoid purchasing from U.S. suppliers if localization cannot be achieved.

Market for Broadcasting Equipment and Programming

The Korean market for digital TV broadcasting equipment has increased dramatically over the past few years. Although equipment is currently being procured primarily for terrestrial TV broadcasting, the market demand for digital equipment for cable and satellite is forecast to be very strong over the next three to five years as Korea introduces digital satellite and cable TV services. There are no major market

access barriers for broadcasting equipment, and most categories of equipment enter Korea with an 8% duty rate based on c.i.f. value.

Korean digital broadcasting for terrestrial TV was first launched in Seoul in December, 2001, and will expand nationwide by 2010. The total market demand for terrestrial digital TV equipment in 2001 was estimated to be US $191 million, a 40% increase over 2000. It is projected to increase by 60% in 2002 to reach a value of U.S. $ 297 million. According to industry sources, Korean market demand for digital TV broadcasting equipment for terrestrial TV services from 2002 through 2005 is estimated to reach a cumulative total of nearly U.S. $1 billion, and investment in equipment will continue through 2010. Presently, more than 90% of the digital broadcasting equipment purchased in Korea is imported, dominated by imports from the U.S. and Japan.

Among total Korean imports of digital TV broadcasting equipment, Japan is still a leading supplier of studio equipment such as VCRs, cameras, and some transmission equipment, while the U.S. is a leading supplier of transmission equipment. As a result of the growing trend for High Definition (HD) TV, the U.S. market share is increasing rapidly. In particular, U.S. equipment supplies nearly 100% of the total market demand for test & measuring equipment and graphic equipment. U.S. suppliers also have a competitive advantage in production equipment, such as video servers and switchers.

Although digital broadcasting equipment for terrestrial TV services is forecast to remain the largest market segment through 2010, Korea's much-anticipated launch of digital satellite TV broadcasts in March, 2002, and digital cable TV broadcasts in early 2003 will continue to bolster strong market demand over the next three to five years. KDB (Korea Digital satellite Broadcasting), the platform operator for satellite TV in Korea, projects purchases of a total of U.S. $100 million worth of digital broadcasting systems for satellite broadcasting by 2005. In 2001, KDB invested approximately $42 million in 2001 in digital broadcasting systems for its broadcasting center in Seoul. Best prospects for U.S. suppliers for sales to KDB include: baseband equipment & master control room (MCR) equipment, enc/mux systems, uplink equipment, software for subscriber management systems (SMS), and chip sets for set-top-boxes (STBs). Since KDB's greatest need is for monitoring equipment and transmission equipment, U.S. digital broadcasting equipment is in a very competitive position. U.S. equipment is forecast to account for 60% of KDB's total planned broadcasting systems for satellite TV services, while European and Japanese products are forecast to account for 25% and 15%, respectively.

Korean digital cable TV services are scheduled to be launched in early 2003, with a test run in October, 2002, according to the Korea Cable Television Association (KCTA). As an initial investment in preparation for the launch, local system operators (SOs) plan to construct a total of five Digital Media Centers (DMCs) in Seoul, Pusan, Taejon, Taegu, and Gwangju as regional super headends by the end of 2002. KCTA estimates that the five Digital Media Centers will purchase approximately U.S. $35 million worth of digital broadcasting systems. The main role of the DMCs will be to receive programs from program providers (PPs), modulate the program signals to digital signals, and transmit the digital signals from the hub to each SO's headend.

The surge of investment for new broadcasting services represents important opportunities for U.S. broadcasters and program providers. Korea currently has four terrestrial TV networks and 50 cable TV channels or program providers. After the launch of digital satellite and digital cable TV services, the number of satellite channels is expected to reach 80 and cable channels, to reach 100 over the next five years. The number of subscribers to new satellite and expanded cable TV services is projected to increase dramatically, and will create a soaring demand for foreign programming. In 2000, U.S. programming was valued at nearly U.S. $ 30 million and represented 74% of total imported programming. With the popularity of U.S. programming in Korea and the enormous increase in channels, U.S. program providers are well positioned to expand rapidly in Korea's growing market. Nonetheless, there are quotas on foreign programming based on program type. Foreign re-transmission channels are restricted to 10% of the total of all cable and satellite broadcasting channels and are restricted from earning revenues through local advertising. Foreign equity investment limits for local System Operators (SOs) and Program Providers (PPs) are presently 33% and will be raised to 49%. Foreign investment in news PPs is prohibited.

Korean terrestrial TV networks plan to purchase about 80% of the broadcasting equipment they require by 2005 as follows:

Estimated Annual Purchases for Digital Broadcasting Equipment for Terrestrial TV Services
in U.S. Dollars Millions, 1999-2005

1999	2000	2001	2002	2003	2004	2005	TOTAL
8.7	133.1	189.1	297.0	257.5	256.2	143.8	1,285.4

In 1999, the Korean market demand for digital TV broadcasting equipment for terrestrial TV services was valued at just U.S. $8.70 million, total imports were valued at U.S. $8.30 million, and U.S. imports, at U.S. $2.5 million. Imports accounted for 95% of total market share, and U.S. imports accounted for 30% of the total import market share and 29% of total market demand. Reflecting Korea's rapid transition to digital broadcasting, in 2000, the Korean market demand increased to U.S. $133.1 million, an increase of 1,302% in real terms over 1999. Total imports increased to U.S. $126.4 million, an increase of 1,296% in real terms, and U.S. imports increased by 1,508% in real terms to U.S. $ 40.2 million. The market share for total imports was 95%, and U.S. imports represented 32% of the import market share and 30% of total market demand.

2. Regulatory Regime

As a result of the U.S.-ROKG talks involving telecommunications held in the early 1990's, the Ministry of Information & Communication (MIC) has taken a series of steps to simplify its type approval/EMC testing procedures. However, many U.S. suppliers still describe MIC's procedures as cumbersome and not in harmonization with internationally recognized norms. U.S. manufacturers of IT equipment note that MIC and the Ministry of Commerce, Industry, and Trade (MOCIE) have to some degree streamlined the safety and EMC requirements and certification processes. However, MIC and MOCIE still routinely require unnecessary and redundant documentation and testing to the same international standard for purposes of type approval/certification of IT/telecom equipment. Many of these requests often appear to exceed the minimum level of information necessary as defined in the 1992 US-ROKG telecom agreement. As a result of the U.S. industry's requests, MIC and MOCIE have cooperatively agreed to make appropriate amendments to the regulations that will alleviate many of the industry's concerns. However, there are still some outstanding issues, as outlined below.

- There are costly delays in MIC's issuing of an approval number required for product labeling. MIC should eliminate this requirement and require the MIC mark only.

- MIC does not accept foreign test lab reports. MIC should accept any ISO-17025 accredited test laboratory report just as Korean test lab reports are accepted in the U.S. through accredited Test Certification Bodies.

3. Best prospects

IT/Telecommunications: Among the best prospects for U.S. exporters are telematics solutions, handsets, and components; next generation network equipment and solutions (WLAN, 4G, and home networking); e-commerce solutions (mobile internet, mobile commerce, and security); and VoIP (Voice over Internet Protocol) solutions.

Broadcasting: Best sales prospects in the Korean TV broadcasting market include Non Linear Editors (NLE), Digital Processing Signals (DPS) equipment, Digital Microware (M/W), Transmitters, Network equipment, Studio to Transmitter Link (STL) equipment, Production equipment (except VCR and camera) - switchers, test/measuring and video effectors - and Broadcasting Vans (SCN and OB Van).

4. Distribution channels; best market entry strategies

U.S. software suppliers considering sales of software to Korean customers via e-commerce should take into account taxation and payment issues when formulating market entry strategies. In general, suppliers of very low-cost software without the need for local support may benefit from sales over the internet. Korean banking practices and Value Added Tax (VAT) regulations severely restrict direct sales of high-priced software via the internet. There is no Customs duty on software products (both customized and packaged) imported into Korea. Korea's Value Added Tax (VAT) of 10 percent is applicable to all imports, including software, based on the CIF value. However, the imposition of VAT on software imported via the Internet will be determined by the location of the server from which customers can download the software. If the server is located in a foreign country, VAT will not be imposed. If the server is located within Korea, the software provider must report sales to the National Tax Service and pay 10 percent VAT. U.S. companies may consider installing servers in their Korea offices so that Korean customers can download software from the server and make payment directly to the firms' Korean offices. In considering this strategy, U.S. companies should compare the benefits and the costs, including VAT, which the Korean office will have to pay to the Korean National Tax Service.

5. Barriers to entry

There are a number of market access issues for U.S. suppliers in Korea's telecom market, including foreign investment ceilings, licensing requirements for service providers, linkage of spectrum allocation and technologies, and the government's push for the development and use of unique Korean standards. Although Korea Telecom was officially privatized in May, 2002, it is still subject to multilateral and bilateral government procurement agreements.

6. Post's contact information

Address: US Commercial Service
82, Sejong-ro, Chongro-ku, Seoul, Korea

Commercial Specialists:

Chris Ahn
Tel: 82-2-397-4186
Fax: 82-2-737-5357
Chris.Ahn@mail.doc.gov

Jong Hoon Kim
Tel: 82-2-397-4110
Fax: 82-2-737-5357
Jong.Hoon.Kim@mail.doc.gov

Yoon Shil Chay (broadcasting)
Tel: 82-2-397-4439
Fax: 82-2-737-5357
Yoon.Shil.Chay@mail.doc.gov

MALAYSIA

1. Market Overview

COMPETITION -- The U.S. dominates Malaysia's software and hardware markets, and is expected to do so for the next 5 -10 years. The main competitors come from Europe and Japan. Niche market players are Korean and Taiwanese firms for hardware. Indian firms, which have already begun to enter the Malaysian market -- especially in system integration services and messaging software – are expected to be tough competition in banking and finance software as well. The growing presence of Chinese software firms results from 35% of the Malaysian population being of Chinese descent, in addition to a large number of businesses are run by ethnic Chinese.

Malaysian firms and end-users feel that U.S. ICT products, equipment, and services are high quality. However due to higher pricing, U.S. products are not as competitive as European and Japanese competitors. And Malaysian companies tend to purchase based more on price than quality. U.S. ICT

companies are perceived as less aggressive than third country competitors, and new U.S. ICT exporters appear to be less willing to customize their products for local consumption.

Despite the weaker competitive position of U.S. firms in Malaysia in relation to their global competitors, U.S. firms rank second as a source of telecommunications equipment, computers, and peripheral imports. However, total export market share of U.S. ICT products is declining. One factor is that the Malaysian companies are not purchasing many big-item ICT products or services.

U.S. companies interested in a long-term presence in Malaysia, must assure their Malaysian customers that the U.S. firm is in Malaysia for the long haul.

2. Regulatory Regime

The Malaysian Communications and Multimedia Commission is the regulator for the converging communications and multimedia industry. At the time it was created its key role was the regulation of the communications and multimedia industry based on the powers provided for in the Malaysian Communications and Multimedia Commission Act (1998) and the Communications and Multimedia Act (1998). Pursuant to these Acts the role of the Malaysian Communications and Multimedia Commission is to implement and promote the Government's national policy objectives for the communications and multimedia sector. The Malaysian Communications and Multimedia Commission is also charged with overseeing the new regulatory framework for the converging industries of telecommunications, broadcasting and on-line activities.

Economic regulation includes the promotion of competition and prohibition of anti-competitive conduct, as well as the development and enforcement of access codes and standards. It also includes licensing, enforcement of license conditions for network and application providers and ensuring compliance to rules and performance/service quality.

Technical regulation includes efficient frequency spectrum assignment, the development and enforcement of technical codes and standards, and the administration of numbering and electronic addressing.

Consumer protection emphasizes the empowerment of consumers while at the same time ensures adequate protection measures in areas such as dispute resolution, affordability of services and service availability.

Social regulation includes the twin areas of content development as well as content regulation; the latter includes the prohibition of offensive content as well as public education on content-related issues.

On 1 November 2001, the Malaysian Communications and Multimedia Commission also took over regulation of the Postal Industry and was appointed the Certifying Agency pursuant to the Digital Signature Act (1997).

3. Best prospects

Malaysian domestic production is in the middle- and lower-end of the ICT spectrum, and heavily production-oriented relatively weak in high-end research and development (R&D). This scenario is expected to change with the Government of Malaysia's (GOM) encouragement of more homegrown R&D, predominantly through technology transfer from foreign companies. As an incentive, the GOM provides five-year tax exemptions for multinational companies (MNCs). To qualify companies must to be either located in a Free Trade Zone (FTZ) or over export 80% of production. U.S. ICT companies can take advantage of GOM incentives by applying for Multimedia Super Corridor (MSC) status. MSC status companies are granted unlimited equity shares in their Malaysian operations, unrestricted employment of foreign workers, unrestricted capital sourcing from abroad, income tax and other tax allowances for five years.

Best prospects are those so identified and encouraged by the Malaysian Communications and Multimedia Commission (MCMC) in the 8th Malaysian Plan (2001 – 2005). The MCMC is interested in facilitating network capability development and roll out along with universal access to content and applications services. MCMC also hopes to facilitate the migration of analogue networks to digital networks, and is pursuing policies to encourage last mile roll out to areas that already fall within the service footprint of existing telephone exchanges.

The MCMC is also promoting the development of a fully digital national network system, looking to develop spectrum policies and strategy implementation for Broadband Fixed Wireless Access, Digital Public Mobile Radio, Digital Sound Broadcasting, Local Internet Peering, IMT-2000 (3G), Digital Terrestrial Television Broadcasting, and the next generation of Internet enabling technologies. The MCMC also encourages a wider choice of service providers for consumers, by developing number portability and personal numbering plan. The MCMC also wants to increase the availability of Customer Premises Equipment (CPE) through review of importation requirements, regulatory requirements, and by promoting domestic manufacturing.

Non-facility based applications are also being encouraged, and network inter-operability to provide seamless access is also planned. New services will be introduced using the existing infrastructure for broadband technologies. Digital platforms are slotted for full introduction in 2005. The MCMC will rationalize Internet Network Services through policies for local peering.

Especially worth noting in the area of spectrum utilization and electro-magnetic compatibility is development of a remote and central monitoring system. The MCMC will also enhance the capabilities of its laboratory test equipment to support enforcement and to ensure compliance through effective monitoring.

Since Malaysia has basic Internet infrastructure in place, network and applications security and user profile identification offer best prospects for U.S. exports, though the Malaysian market is not familiar with these types of Internet solutions, as they are not readily available. Other areas of opportunity include wireless Internet connection services, software for broadband applications, and content provision.

Another means for US firms to collaborate with Malaysian companies is in providing content. Content providers with the ability to customize/localize content in accordance with local cultural context and norms are in demand.

Services dealing with digital copyrights, royalties, and other e-legislation issues that relate to a growing Malaysian e-commerce sector also afford good opportunities, since there are few local or foreign firms offering this expertise. Licensing and content sharing may provide healthy sources of new revenues for U.S. firms as Malaysian ISPs are searching for one-stop solution foreign partners in the portal payment gateway area.

The telco business is still the key growth area for the next few years. Content management applications that help telcos provide better quality service is an area worth exploring, as is any activity that increases bandwidth. Future export growth opportunities are primarily in mobile telecommunications rather than traditional fixed-line services.

4. Distribution channels; best market entry strategies

Foreign firms must have a local presence to sell in the Malaysian market. Initially that means a strong agent or distributor. When sales reach a critical mass, U.S. companies should consider establishing its own office. Local presence is essential for successful business in Malaysia.

5. Barriers to entry

IPR -- One of the main problems for Malaysia's ICT industry is software and entertainment piracy. According to Business Software Alliance (BSA), Malaysia's rate of business software piracy was 70% in 2001, representing RM359.1 million loss to the industry. This rate also indicates an upward turn from 2000, when the business software piracy rate was 66%. The majority of software piracy is in packaged software. For the entertainment industry, piracy predominates in foreign films (normally in VCD format), and music industry areas (CD's).

The Malaysian government has been actively raiding the pirated VCD vendors as well as closing down the manufacturers/producers. At the same time BSA, in collaboration with the GOM, is targeting corporate violators and bringing them to task for using pirated software.

Import Restrictions -- IT products and software are generally not subject to tariffs or taxes. Telecommunications equipment (telephone sets, videophones, telephonic switches etc.) is subject to 15% import duty and 10% sales tax. Telegraphic switches are subject to 5% import duty and 10% sales tax. Fax machines, teleprinters, and other carrier-current lines systems for digital lines are not subject to import duty. However, 10% of sales tax is levied. There is no import tax levied on telephonic spare parts, but there is a 10% sales tax.

6. Post's contact information

Ms. Tracy Yeoh, Commercial Specialist
U.S. Commercial Service, U.S. Embassy
376 Jalan Tun Razak
50400 Kuala Lumpur
Malaysia
Tel: 60-3-2168-5089
Fax: 60-3-2142-1866
E-mail: tracy.yeoh@mail.doc.gov

PHILIPPINES

1. Market Overview

Cellular mobile telecommunications services (CMTS) will continue to propel market growth in the industry because of the continued demand for text messaging. From 1997 to 2002, the total number of subscribers increased from 1.3 million to 15.5 million. The Philippines is reportedly the world leader in the Short Messaging Service (SMS) cellular phone market with Globe Telecom and Smart Telecom handling more than 200 million messages per day. GSM and GPRS (Global Packet Radio System) will likely remain as the country's cellular technology standard.

Mobile content, applications and e-commerce are expected to further drive wireless data adoption. GSM operators continue to outmaneuver each other by offering innovative SMS-based content and services such as location-based services, greeting cards, message icons and logos, ring tones, games, horoscopes, other entertainment information, traffic, weather and stock market updates, international text messaging and email, mobile banking, movies/events reservations, mobile vending, landline texting, and more.

Because of the phenomenal growth in the wireless applications, wireline telephone service posted negative growth in 2002. About 50% of the available fixed line are unused. Major telecom operators are focusing more their efforts on upgrading existing networks to broadband to accommodate the increasing

demand for multimedia services. Fiber-optic, digital networks running Asynchronous Transfer Mode (ATM), frame relay, cable internet and Integrated Services Digital Network (ISDN) rollouts were made during the last two years.
The Philippine broadcast industry, on the other hand, continues to grow steadily despite competition from cable, direct broadcast satellite and internet. The future development of the Philippine broadcast industry will depend on introducing appropriate technologies, establishing local production capabilities, identifying the right mix of programs, and solidifying the legal framework. Competition between Philippine broadcasters and outside programming, especially cable and satellite, will undoubtedly heat up over the near term. Program variety and range along with production and technical expertise will determine who gets the bigger slice of the market pie.

The industry will slowly shift to digital television and computerized broadcast systems. The convergence of broadcasting, cable, telecommunications, and computer services into one integrated and interactive digital system will take time but inevitable. This convergence will result in new products and services to consumers. Digital transmission systems, which could integrate a number of broadcast services into a single broadcast wave, will slowly replace the analogue systems.

2. Regulatory Regime

The Department of Transportation and Communications (DOTC) acts as the overall telecommunications sector policy-planning department. The National Telecommunications Commission (NTC) is the agency within the DOTC that implements and regulates the policies set forth from the DOTC. The NTC is responsible for all licensing, frequency allocation and other regulatory, monitoring and sanctioning activities.

All entities wishing to offer telecommunication and broadcast services must secure a congressional franchise and a Certificate of Public Convenience and Necessity (CPCN) from the NTC. The NTC requires all equipment dealers and their respective products to be authorized and approved by their office before the products can be sold in the country. New equipment suppliers can refer to the NTC to source accredited distributors.

3. Best prospects

Aside from wireless applications, best prospects in the telecom market includes alternative modes of data transmission and internet access using both wire and wireless technologies. The expansion of internet-enabled services, the convergence of media, and the emergence of new technology-based products will further fuel the shift from narrowband to broadband requirements.

In the broadcast industry, companies will invest on digital-ready transmission links, microwave, satellite dish, video-recording equipment, and other production equipment. There will also be opportunities for broadcasters in providing Web TV and computer based-systems to reduce studio personnel costs.

Distribution channels; best market entry strategies

<u>Best Prospects</u>
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Distribution Channels
While foreign suppliers can import directly, it is common practice to designate a local distributor and/or value-
added reseller. The market expects foreign players to develop a technical support site in the country. Technology transfer and constant training of local staff or partners is expected.

The Philippine market is very price sensitive. Corporate customers and consumers alike tend to expect discount pricing and varying price packages tailored to different levels of affordability. Usage-based and volume-based pricing is most popular. Corporate customers look for quality products, packaged solutions, excellent after-sales service and account management. Consumers tend to look for affordability, network and product quality and fashionable designs. Relationship building is also very important, therefore expect to allocate a large share of marketing funds to sales representation and account management.

5. Barriers to entry

Telecommunications and broadcast equipment re freely importable with duty charges ranging from 3% to 5%. The Bureau of Customs is responsible for monitoring and inspecting all imported goods. The Philippines also imposes a 10% value-added sales tax (VAT) to all goods sold within the country.

The Philippines encourages joint venture arrangements, although foreign companies are limited to 40% equity in local telecommunication operators except for broadcast, which requires 100% Filipino-owned entities. Local operators choose foreign telecommunication operators as strategic partners for financial resources and technological strength.

Since telecommunication infrastructure projects require considerable capital expenditures, it is common practice for equipment suppliers to arrange project financing for these initiatives. Financing tends to be arranged through a combination of loan packages from foreign banks and export credit agencies or raised directly through the money markets. Equipment suppliers to play a large role in securing necessary financing.

Software piracy continues to be a large problem the Philippines. The Philippine government passed the Intellectual Property Code in 1997, and established a corresponding government agency to monitor and protect trademarks, patents and copyrights. Registration with the Intellectual Property Office is the best means to ensure protection of goods and services sold in the Philippines.

6. Post's contact information

Aida L. Miranda, Sr. Commercial Specialist
25th Floor, Ayala-Life FGU Bldg., 6811 Ayala Avenue,
Makati, Philippines
Tel: (632) 888-4088, Fax: (632) 888-6696
Email: Manila.Office.Box@mail.doc.gov, aida.miranda@mail.doc.gov

SINGAPORE

1. Market Overview

Singapore has one of the most advanced info-communications infrastructures in the world. This has been possible due to the small size of the country, the high national income, and the government's commitment to develop the country into a premier telecommunications and broadcasting hub in the region.

Singapore's telecom services market is set to cross US$3.8 billion in end-user spending in 2003, up 11 per cent over 2002, according to a report by International Data Corp (IDC). Virtually every home in Singapore has a fixed telephone line. Mobile phone penetration reached an all-time high of 78.6 percent in January 2003, with more than 3.2 million mobile subscribers in a country with a population of only five million. There are more than 2 million internet subscribers in Singapore and every school and every public library is equipped with PCs with broadband access.

Currently, 16 satellite broadcasters have set up base in Singapore or are up-linking from Singapore. These include AXN, BBC Worldwide, Business News (Asia), Discovery Asia, ESPN STAR Sports, Expand Fast Holdings, Home Box Office (HBO), MediaCorp News, MTV Asia Nickelodeon, GNV Operations, SET Satellite and Walt Disney Television. There are four uplink and downlink service providers, two free-to-air TV broadcasters and one pay-TV service provider in Singapore. The government has announced it will open up the pay-TV market to new players.

2. Regulatory Regime

The Info-communications Development Authority (IDA) was created in late 1999 with the merger of the Telecommunication Authority of Singapore (TAS) and the National Computer Board (NCB). The IDA is the local regulator that is authorized to establish standards, codes and regulations to be observed by operators of telecommunications systems and services and to regulate the conduct of telecommunications licensees in the provision of telecommunications systems and services. It is also the agency that type approves telecommunication equipment imported for use in Singapore.

The liberalization of Singapore's telecommunication industry has increased competition for existing players and provided opportunities for many new market entrants. As at end 2002, 34 facilities-based and 636 service-based telecom service operators were licensed to operate in Singapore. The new deregulated environment entails more challenges for Singapore's existing telecom service providers. They have to be more customer-centric in order to secure market share and create innovative new services. The telecommunication services industry is rapidly transitioning into one that comprises many segments with a combination of niche players as well as full service providers.

On January 1, 2003, the government merged the Singapore Broadcasting Authority (SBA), the Films and Publications Department, and the Singapore Films Commission to form the Media Development Authority (MDA). The MDA now regulates all media including the broadcasting industry in Singapore. It also aims to develop and promote Singapore as a vibrant global media city, and wants to enhance the local environment to attract new players and encourage more varied, high-end and high-value media activities to Singapore. The activities include co-productions, animation production, multimedia content creation, content financing and ownership, marketing and distribution, and R&D.

3. Best prospects

The Singapore market for traditional telecommunication hardware is saturated as its infrastructure is already very well developed. There are opportunities, however, to sell new applications and solutions to Singapore as it is a leading adopter of new applications and technologies in the region. Areas of best prospects include broadband services, internet protocol virtual private network, wireless communications and security technologies.

With its high mobile phone penetration rate, Singapore is an ideal test bed for the development and launch of new wireless applications, products and services. In 2001, the IDA awarded 3G licenses to three mobile operators in Singapore and they are expected to roll out their 3G services nationwide by end 2004. The building of the 3G networks are expected to cost US$600 million.

Singapore also acts as a major distribution center for companies interested in selling to the region as reflected by re-export data. A significant amount of telecommunication products imported into Singapore

are meant for third country consumption. The republic serves as a regional showcase, and it is not uncommon that equipment type-approved in Singapore is generally accepted in the surrounding countries.

4. Distribution channels; best market entry strategies

U.S. global telecommunication service providers should consider collaboration with any of the domestic telecommunications service providers who are able to provide them with the supply of interconnect related services, domestic and international leased circuits, network infrastructures and local marketing expertise. Alliances eliminate heavy investment in infrastructure outlay as well as provide immediate marketing reach due to existing network. This is an attractive approach which most foreign companies adopt to penetrate and reach end-users in Singapore.

For technologies and other innovative services, a direct approach to the service providers in Singapore can be made without local partners as the services will be assessed based on its usefulness in assisting the tells achieve their marketing and technical goals. With total liberalization of the Singapore telecom market, U.S. service providers can now apply for licenses directly from the IDA.

For U.S. hardware suppliers, a good way of entering the market would be to work with the large vendors who are currently supplying to the major service providers. New-to-market and small to medium-sized firms should consider linking with local partners who are well versed with local conditions and who can assist them in entering the market.

There is no special legislation in Singapore covering agency agreements. Mercantile laws in Singapore are based on English laws. The contract sets the terms of agreement between vendors and buyers. The parties involved draw up a satisfactory contract that determines the conduct of both parties during the contract period including the terms of cancellation.

5. Barriers to entry

Singapore is generally a free port and an open economy. In 1989, Singapore lifted restrictions on the sale of all telecommunication consumer goods (except for satellite receiving dishes, which are not permitted for individuals in Singapore).

There are no tariff or non-tariff trade barriers to the imports of telecommunication products into Singapore. Parallel imports of telecommunication equipment are allowed. However, such imports require type approvals from the IDA. More details can be found at http://www.ida.gov.sg.

In the area of intellectual property rights, the government has laws to protect against piracy and copyright infringement, but it relies on the private sector to take the lead against transgressors. In general, Singapore maintains one of the most liberal trading regimes in the world.

6. Post's contact information

Chia Swee Hoon, Senior Commercial Specialist
25 Napier Road
Singapore 258508
Tel: 65 6476-9403
Fax: 65 6476-9080
E-mail: sweehoon.chia@mail.doc.gov

TAIWAN

1. Market Overview

Telecommunications: Since 1996, Taiwan has liberalized its telecommunications sector in keeping with efforts to modernize communications networks and to meet World Trade Organization (WTO) commitments. Taiwan is speeding up the construction of broadband networks through the liberalization of fixed network service (local/international calls and international submarine cable), mobile communications service, and satellite service. In 2002, sales of telecommunications equipment in Taiwan totaled USD 5.0 billion, up 9.0 percent from the previous year, despite the worldwide economic downturn. Given the on-going network construction projects of fixed network and third-generation (3G) mobile services carriers, Taiwan's market for telecommunications equipment is projected to grow 5 - 10 percent each year through 2005.

Broadcasting: The Taiwan authorities are targeting rollout in 2006 for digital television and digital radio services in keeping with international developments in this area. Digital broadcast trials were launched between 1998 and 2003. Taiwan has five terrestrial television networks, each requiring a budget of approximately USD 100 million (NTD 3 billion) for digital broadcast and production equipment upgrade over the next three years.

Taiwan has seven island-wide F.M. networks and approximately 25 A.M. and 100 F.M. regional radio stations. Approximately USD 100,000 is required for each radio network upgrade. Taiwan relies completely on imports of digital broadcast and production equipment to meet its demand and it is estimated that the local digital television and digital radio broadcast and production equipment market will reach a value of approximately USD 510 million by 2006.

In terms of cable networks, Taiwan claims one of the highest cable penetration rates in the world. Over 80 percent of the island's total households (4 million) and nearly 90 percent of urban households subscribe to cable TV. Taiwan cable networks have consolidated substantially and are dominated by a handful of major multiple system operators (MSOs). In addition to offering access to broadband Internet-over cable networks, these MSOs are actively looking for the voice over cable solution.

2. Regulatory Regime

Telecommunications: The Directorate General of Telecommunications (DGT) is Taiwan's telecommunications regulatory body. Taiwan's 1996 Telecommunications Act divided services into Type I and II. Type I is facility-based services and Type II includes those services using the Type I network, while also providing additional value-added services. The maximum allowable foreign equity in a Taiwan Type I telecom service is 60% (49% direct and 11% indirect investment). Type II service providers are allowed up to 100 percent foreign ownership. Taiwan adopted Global System for Mobile Communications (GSM) as its 2G standard (GSM 900/1800 Megahertz).

Taiwan awarded five 3G licenses in 2002. While four out of the five 3G licensees have tendered their infrastructure bids using Universal Mobile Telecommunications System (UMTS) mode, one has tendered for Code Division Multiple Access-2000 (CDMA-2000) mode.

Broadcasting: Taiwan's Government Information Office (GIO), is the broadcasting regulatory body. In mid-2001, Taiwan's terrestrial television networks decided to switch their DTV standard from Advanced Television System Committee (ATSC, an American standard) to Digital Video Broadcasting for terrestrial (DVB-T, an European standard). Ten island-wide and regional radio stations are involved in digital audio trial runs for European standard Eureka-147. Trial runs for U.S. standard In Band on Channel (IBOC) are expected in 2003.

3. Best prospects

Telecommunications: Taiwan awarded fixed network licenses to three private sector bidders in mid-2000. Each new entrant committed to build out networks of at least one million new lines over six years. Industry insiders estimate that each one million-line fixed network system will require a minimum of USD 1 billion investments in network construction. Taiwan awarded 3G licenses to five bidders in 2002. Each licensee is required to build a network over the next four years and to install 250 base stations and relevant telecommunications facilities prior to commencing service to customers. Industry analysts estimate that each 3G network will require a minimum of USD250 million investments in network construction. Altogether, Taiwan's 3G-network equipment market is expected to reach USD1.2 billion by 2006.

Broadcasting: U.S. digital transmission, audio production, and test equipment suppliers should have excellent sales opportunities as Taiwan's broadcast digitalization proceeds.

4. Distribution channels; best market entry strategies

Telecommunications and broadcasting equipment suppliers wishing to sell their products in Taiwan can appoint a domestic company to act as an agent or distributor if sales volume is small. Suppliers with large sales volume should consider setting up branch offices to provide better customer service and technical support. Direct contact is the most efficient method for selling telecommunication and broadcasting equipment in Taiwan.

5. Barriers to entry

While Taiwan companies are well known for their ability to quickly incorporate ideas found in competing products, Taiwan's copyright, patent, trademark, trade secret and integrated circuits laws already meet most international standards. There is general respect for these laws, and major local and international distributors that are notified that they are selling counterfeit goods will typically cooperate with the rights holder and cease sales.

Market monitoring systems (for both the export and domestic markets) appear to have helped deter, to some extent, the sale of counterfeit goods. Patent, copyright and trademark holders should of course investigate the need to or desirability of filing for those rights in Taiwan.

Taiwan is a signatory to the Information Technology Agreement (ITA). Under the ITA, Taiwan has phased out tariffs on information technology products since January 1, 2002. A harbor construction fee, amounting to 0.3 percent of declared value, is levied on all goods arriving by ocean carrier. In addition, a five-percent sales tax (value added tax, VAT) is levied on all products sold in the domestic market.

6. Post's contact information

Frances Li, Commercial Specialist
Commercial Section
American Institute in Taiwan
Room 3207, 333 Keelung Road, Sec. 1
Taipei 110, Taiwan
Tel: 886-2-2720-1550, Fax: 886-2-2757-7162
E-mail: frances.li@mail.doc.gov

THAILAND

1. Market Overview

Fast-changing technology, competitive prices and the entry of new strong financial players have intensified the competition in Thailand's telecommunications market. The growth rate of fixed line telephones is relatively slow at 5-7% due to high acquisition costs. On the other hand, the mobile phone growth rate is incredible. The penetration rate expanded from 18% in early 2002 to 22% or 18.5 million subscribers at the end of the year. Monthly fee cutting and value-added services such as higher data speed technologies, multimedia capabilities and short-message-services are the most important of today's sales strategies. Even though Thailand is somewhat behind in implementing new technologies, the country has followed developed market trends on wireless technologies from analog to digital, then WAP to broadband.

In addition, Thai internet usage has grown tremendously by approximately 20-30% year-on-year, with 3.5 million users at the end of 2002. However, the market for paging and trunked mobile radio services is completely dead, although TOT (Telephone Organization of Thailand) maintains service to about 10,000 subscribers. Wireless local loop is used in the TOT networks to support fixed line services. Of the fixed line telephones connected in rural, island and mountainous areas, satellite and microwave links are also part of the infrastructure.

2. Regulatory Regime

Telecom: Thailand has made little progress reforming its telecommunications industry since the country committed to the WTO in 1995 to complete its liberalization by 2006. The telecommunication industry has been at a standstill as market liberalization is pending the onset of its two most important fundamental elements -- the establishment of independent regulator, the National Telecommunications Commission (NTC) and the conversion of the existing telecommunications concessions.

The new independent agency, NTC will be responsible for the allocation of licenses (including licenses for commercial satellites and launch services), spectrum management, and the supervision of telecommunications operators. According to the new telecom law, no new radio spectrum, new telecom licenses or new entrants can be approved until the NTC is set up.

Up until now, Thailand has been regulated and monitored by the Post and Telegraph Department (PTD), the Telephone Organization of Thailand (TOT) and the Communications Authority of Thailand (CAT), all under the administration of the Ministry of Information and Communications Technology (MICT). The PTD is responsible for managing and approving the use of radio frequency and radio-communications equipment. The TOT and the CAT, both state-owned enterprises, are key licensors and providers of the telecommunications services. TOT is responsible for providing domestic and international telephone service to neighboring countries with shared borders, leased circuits for domestic transmission of voice, data and television; and other value-added services such as cellular phone, paging and card phones. CAT is responsible for providing postal services, international telephone/fax services and leased circuits, some microwave radio networks in rural areas, and cellular phones.

Broadcast: Similar to the NTC, the creation of a new independent regulator for the broadcast industry, the National Broadcasting Commission (NBC) is still pending in Thailand. As with the NTC, the selection process for this new commission has been mired in political in fighting. Until the NBC is formed, the Public Relations Department (PRD) and the Mass Communication Organization of Thailand (MCOT or Channel 9) are the government agency and state enterprise, respectively, which own, operate and/or lease their broadcasting services countrywide. Private operators of Cable TV, PAY-TV and other broadcasting programs have to be awarded a license from them. Such licenses will eventually be issued by the NBC once it is formed.

3. Best prospects

- *CDMA expansion:* The Hutchison-CAT metropolitan network expansion project operating in CDMA system has been unofficially awarded to Nortel Canada and Qualcomm USA. -- $ 760 million project -- the final decision is still pending.

- *3G:* The development of 3G technology is moving forward. A new company, Thai Mobile Co, as well as Hutchison-CAT, will operate a CDMA-based mobile phone network, which is fully support 3G growth in the future.

- *Infrastructure equipment:* Base stations, Switching systems, Networking systems (wireless, optical and hard-wired networks), Voice and data convergent networks, Operation support and maintenance systems, Satellite ground network equipment

- *Subscriber equipment:* Handsets and accessories, Smart phones (the combination of a cell phone and personal data assistant)

- *Application Software:* Platform applications, Speech recognition applications, Multimedia applications, Billing applications, CRM (Customer Relationship Management) applications, Network management applications

4. Distribution channels; best market entry strategies

A strong local partner is recommended as the best market entry strategy for entering and promoting telecommunication products and services in Thailand. It is important to appoint a local agent, who can deal with problems related to regulations, bureaucratic procedures, local business practices and marketing.

5. Barriers to entry

Intellectual Property Rights: Thailand has a weak track record of IPR protection, although the laws and regulations to protect copyrights, trademarks and patents are in place. Enforcement is the biggest shortcoming, and gray market mobile phones plague the market. The country has, however, appointed a new "IPR Czar"who has publicly committed to fight piracy and IPR infringement, and spearheaded a Memorandum of Understanding between 12 agencies involved in IPR enforcement.

Tariffs and Import Duties: Duties on telecommunication and broadcasting equipment and technology are 3-30% of the commercial invoice based on the harmonized system. Spare parts are assessed tariffs of 30-40%.

Government Policy: Inconsistent policies from Royal Thai Government and bureaucratic procedures are the major barriers to entering to telecommunications industry in Thailand. Many projects are in limbo pending implementation of the new independent regulators - NTC and NBC. In some cases, telecom project winners have been announced, but the project cannot be implemented because of changes in personnel in the new Ministry and among decision-makers.

Market: The telecom market is highly price competitive and presents a challenge to new market entrants. Brand awareness is high in consumer product categories, and new market entrants need build name recognition to compete.

6. Post's contact information

Commercial Service Bangkok, American Embassy
Ms. Judy R. Reinke, Commercial Counselor

Mr. Satit Sanongphan, Commercial Specialist
3rd Floor, Diethelm Towers A, Suite 302
93/1 Wireless Rd, Patumwan
Bangkok 10330 Thailand.
Emails: judy.reinke@mail.doc.gov; ssanongp@mail.doc.gov

VIETNAM

1. Market Overview

Telecommunications and related industries are currently among of the fastest growing industries in Vietnam. Vietnam's telecom sector has been rated by the International Telecommunication Union as the second fastest-growing telecom market in the world after China. Vietnam is undergoing strong development in three key areas – telecom growth rate, technology upgrade, and value added services. The Government of Vietnam has directed special attention to developing the ICT sector in order to meet the demands of industrializing and modernizing the country. The government has provided preferential policies for the sector, facilitating its development in order to catch up with regional and world standards.

The monopoly of state corporations in the ICT sector is gradually giving way to competition. Within the last two years, the State began to slash fees for channel leases from monopolized enterprises. Goals have been set for the abolition of other fields of corporate monopolies, enabling rapid movement into a competitive market. According to this strategy, private and certain foreign invested enterprises are now able to take part in post and telecom services supply. The non-state sector is expected to increase its service market share in post and telecom markets by 25-30% by 2005 and 40-50% by 2010. The government is encouraging all forms of foreign investment, including 100% foreign-invested firms, to transfer technology into the country. By 2005, all provinces and cities are to be connected to broadband networks. Teledensity is expected to increase to 8-10% in 2005 and 15-18% by 2010 from 7% in 2002. In 2010, the national information highway is to be connected to all communes and districts nationwide by cable and other high bandwidth methods, with at least 30% of subscribers able to access the Internet. By 2010, telephone and Internet use is targeted to reach the regional average, with 60% of households owning telephones. While increasing telecom capacity, Vietnam has reduced international telecom charges by a yearly average of 10% and international volume has increased by 18% annually.

In addition to subsidiaries of Vietnam National Post & Telecommunications Corp. (VNPT), there are currently 20 joint ventures manufacturing equipment and facilities for national telecom needs. About 40% of telecom equipment and services are sourced locally, while the rest must be imported. VNPT enterprises are increasing their industrial output by 15% a year. Meanwhile, joint venture investments from foreign companies are helping to fund infrastructure development in hopes of some day making money off the deals. Some examples include Swedish telecommunications firms Ericsson Radio and Comvik International, which are supplying equipment for a nationwide mobile telephone service; and Siemens AG, Germany, which is installing a nationwide digital GSM mobile phone network.

Under the recently implemented Vietnam - US Bilateral Trade Agreement (BTA) Vietnam has committed to liberalizing the telecom service market with the following important milestones: Permitting the establishment of joint venture enterprises: 2 years after the initiation of the Agreement, to provide value-added services; 3 years after the initiation to provide Internet services; 4 years after the initiation, to provide basic services such as circuit-switched data, packet-switched data, telex, telegraph, private leased circuit, radio-based services such as cellular mobile and satellite services; 6 years after the initiation, to provide telephone services including fixed local, long distance and international services.

2. Regulatory Regime

The Ministry of Post, Telecommunications and Information (MPT) is currently the sector administrator. As such, MPT is responsible for developing the national information infrastructure, popularizing telecom

services, and making contributions to national socioeconomic development. The telecom backbone is mainly based on European standards. GSM technology is used for most cellular networks, but a CDMA network is about to be launched nationwide, beginning in Hanoi and Ho Chi Minh City.

Equipment standards are developed and regulated by the MPT. Before any equipment can be imported it must comply with these standards.

3. Best prospects

Vietnam has adopted a "sustainable integration and development strategy as a cornerstone for the development of the telecoms sector in the next 10-15 years. Under this strategy, Vietnam will build the National Information Infrastructure (NII), which will include a broad range of innovative, high quality and secured Internet and telecom services at an affordable price. The development of NII will also accelerate the development of Internet and telecom services to remote and mountainous areas and push the growth of mobile services, e- commerce and e-government services.

The telecom sector will deploy national projects such as building the Vinasat satellite, the domestic marine fiber optic cable, the Ho Chi Minh Highway fiber optic system and the coastal information system. VNPT officials announced a list of five telecom projects for which American investment is sought. The projects include building a North-South optical cable network capable of handling 650,000 subscribers, adopting CDMA technology, and promoting the domestic manufacture of telecoms equipment.

Best prospects for American exports include hardware, software and services for all of the above-mentioned projects.

4. Distribution channels; best market entry strategies

All U.S. participation in the market will have to be through joint ventures or business cooperation contracts
(BCCs), with the U.S. partner limited to a 49% share of any JV.

All imported equipment into Vietnam must go through a company that has a telecom equipment import/export license. Each shipment must also have an import permit (foreign trade permit) from the Ministry of Trade, in order to clear customs. Business and consumer telecom products are subject to import duties, which vary according to the product.

The majority of the imported telecom equipment is sold directly to the local telecom service providers or their subsidiaries. These State-owned enterprises and local private companies have flat distribution channels, because these organizations sell directly to the equipment buyers or consumers. Local distributors must have an import license for telecom equipment or should have an existing relationship with licensed trading companies.

Foreign suppliers will need to allocate a sufficient budget to handle the training of distributors. As some of the wireless telecom equipment is new to the market, preparation and training are essential.

5. Barriers to entry

Enforcement of all forms of intellectual property rights in Vietnam is very weak. While Vietnam has committed to improve its IPR enforcement under the BTA, it will take years before an effective IPR regime is in place. Tariffs currently range from 5-60%. Compatibility of new equipment with existing equipment and certification of compliance with technical standards may also pose a challenge to the foreign equipment supplier.

6. Post's contact information

Robert Bannerman, Principal Commercial Officer
E-mail: robert.bannerman@mail.doc.gov

U.S. Commercial Service, Hanoi
Tel: (84-4) 831-4650 / Fax: (84-4) 831-4540
Dzung Nguyen, Commercial Assistant
E-mail: nguyen.dzung@mail.doc.gov

U.S. Commercial Service, Ho Chi Minh City
Tel: (84-8) 825-0490 / Fax: (84-8) 825-0491
Hoa Nguyen, Commercial Assistant
E-mail: nguyen.hoa@mail.doc.gov

Asian Development Bank

1. Market Overview

The transport and communications sector, in which road, rail and port projects dwarf the telecom subsector, was the largest sectoral lending area for ADB in 2001 and 2002. About $3 billion was channeled to the sector in 2001 and 2002. As a matter of policy, ADB's direct support to telecom projects is minimal in order to allow more room for private sector participation. Between 1995 and 2000, however, ADB funded telecom projects in China and Thailand for an aggregate loan amount of $200 million. ADB also provided two technical assistance grants, totaling $300,000 to rehabilitate East Timor-Leste's telecommunications sector in 2000. In 2001, ADB provided a $700,000 technical assistance grant to countries in the Greater Mekong Subregion to formulate a telecommunications policy.

Asian governments borrowing from ADB use a major portion of the ADB loans to procure civil works, goods and services. ADB also provides technical assistance grants to its member countries, which enables these countries to hire consultants to provide project design and management services. In the Mekong project, American consultants competed with consultants from Australia, Canada, Denmark and France. Between 1995 and 1998, American firms, such as Hughes Networks, EF Data and AT&T, won over $32 million in contract awards for telecom equipment under ADB projects in China, India and Indonesia. In 2002, about $4 million in American telecom equipment, systems and software was procured under ADB-financed projects. Canadian, Japanese and German firms bid on telecom projects, as did other Asian bidders from China, Singapore, Hong Kong and Korea. Distributors from Pakistan, China and Indonesia actively supplied American products to ADB-financed projects.

Opportunities for telecom equipment and systems suppliers, exist in a broad range of ADB development projects, whether labeled a telecom project or not. For example, computer equipment, software, network, audio-visual and telephone systems are procured under urban development, education and power projects. Toll collection, communications and traffic monitoring systems are procured under road/expressway projects. Signaling and digital transmission equipment are components of railway projects. Digital mapping equipment is used in agriculture, energy, environment and geographical mapping projects. Airport projects include aeronautical telecommunications network systems (AFTN/AIS) components, as well as other components.

In the road/railway sector alone, ADB plans to provide $7.7 billion in loan and technical assistance during the 2003-2005 program cycle. The planned projects are in Afghanistan, Azerbaijan, Bangladesh, Bhutan, Cambodia, China, East Timor, Fiji Islands, India, Indonesia, Kazakhstan, Kiribati, Kyrgyz Republic, Laos, Maldives, Mongolia, Nepal, Pakistan, Papua New Guinea, Philippines, Sri Lanka, Tajikistan, Thailand, Turkmenistan, Tuvalu, Uzbekistan, Vanuatu and Vietnam.

2. Regulatory Regime

ADB procurement rules mandate that tender specifications be approved by the bank prior to tendering. Interested bidders should actively market their products and technology first to borrowing member governments, specifically the project executing agencies before approaching ADB. A sample list of the types of government executing agencies that will oversee ADB telecom projects in the short term are:

- Ministry of Communications, Transport, Post and Construction – Lao PDR
- Ministry of Posts and Telecommunications - Cambodia
- National Information Center, Ministry of Communication and Information Technology - India
- Directorate General of Higher Education, Primary and Secondary Education - Indonesia

3. Best prospects

Projects planned specifically in the ICT sector during the 2003-2005 program cycle include a $20 million loan to Cambodia and Laos (as part of the Greater Mekong subregion) to build a telecommunications backbone project. The loan is slated for processing in 2004. ADB also plans to lend India $100 million to build electronic governance and ICT infrastructure in 2004. The bank will provide a $1 million technical assistance grant to India in 2003 to prepare for this loan. In Indonesia, an $800,000 technical assistance grant is planned in 2004. The grant will fund a study to formulate an ICT development strategy for Indonesia.

Below is a summary of these projects:

2003	$1,000,000 Technical Assistance	India Electronic Governance and ICT Infrastructure (Bidding opportunities for consultants)
2004	$800,000 Technical Assistance	Indonesia Formulation of an ICT Development Strategy (Bidding opportunities for consultants)
	$100 M Loan	India Electronic Governance and ICT Infrastructure (Bidding opportunities for consultants and equipment/systems suppliers)
	$20 M Loan	Cambodia & Laos (Greater Mekong Subregion) Telecommunications Backbone Infrastructure (Bidding opportunities for consultants and equipment/systems suppliers)

4. Distribution channels; best market entry strategies

Companies interested in bidding on public tenders issued under ADB-financed projects should have in-country representation. The U.S. Commercial Service network can assist such companies in finding suitable Asian business partners. ADB procurement guidelines mandate International Competitive Bidding for large procurements (usually above $500,000 each). Procurement notices are advertised in local and international publications. The U.S. Commercial Liaison Office for the Asian Development Bank (CS ADB) also broadcasts early project leads and procurement notices to its clients.

5. Barriers to entry

ADB's presence in a sector in a given country is affected by the availability of other funding sources in that country. The availability of funding from these sources directly affects the government's decisions on the level of assistance it needs from ADB. While procurement under ADB lending to its developing member countries is open to competition among all ADB members, procurement from other sources, including bilateral donors, comes under the influence of the donors, whose preferences may direct the procurement process.

6. Post's contact information

U.S. firms interested in doing business with the ADB should work with CS ADB, which provides market research, counseling, business facilitation, advocacy and other services to U.S. firms, their partners and affiliates. The office is an integral part of the U.S. Commercial Service network and can be contacted at:

U.S. Commercial Liaison Office for the Asian Development Bank
American Business Center, 25th Floor Ayala Life-FGU Center
6811 Ayala Avenue, Makati City, Philippines
Tel: (632) 887 1345 (47); Fax: 887 1164
e-mail: manila.office.box@mail.doc.gov

SECTION II: Fixed-line and Cellular Data

	Fixed-line		Cellular phone	
Market	**Number of subscribers**	**Penetration (per 100 population)**	**Number of subscribers**	**Penetration (per 100 population)**
Australia	10 million	98.0%	12.64 million	60.0%
China	218 million	17.5%	212.4 million	16.2%
Hong Kong	4.8 million	56.0%	5.8 million	85.0%
India	37 million	3.7%	11.7 million	1.1%
Indonesia	7.6 million	3.6%	11 million	5.2%
Japan	61.33 million	48.1%	79.8 million	62.7%
Korea	23 million	49.0%	23.4 million	67.5%
Malaysia	4.7 million	18.8%	9.2 million	37.3%
Philippines	3.3 million	8.9%	15.5 million	19.4%
Singapore	1.93 million	46.4%	3.27 million	78.6%
Taiwan	13 million	58.2%	23.9 million	106.2%
Thailand	6.5 million	12.8%	20.6 million	14.3%
Vietnam	5.6 million	6.9%	2.68 million	2.5%

SECTION III:

Telecommunication Regulatory Agencies and Websites

	Agency	Website
Australia	Australian Communications Authority	www.aca.gov.au
China	Radio Regulatory Department of MII	www.srrc.gov.cn
Hong Kong	Office of the Telecommunications Authority	www.ofta.gov.hk
India	Department of Telecom Telecom Regulatory Authority of India	www.dotindia.com www.trai.gov.in
Indonesia	Ministry of Communication and Telecommunications	www.postel.go.id
Japan	Japan Approvals Institute for Telecom Equipment (JATE) Telecom Engineering Center (TELEC) - PHS/cellular certification+B8	www.jate.or.jp/index_e.html www.telec.or.jp/ENG/Index_e.htm
Korea	Ministry of Information and Communication, Radio Research Laboratory RRL Certification/Approval	www.rrl.go.kr http://approval.rrl.go.kr/eng/index.html
Malaysia	Malaysian Communications and Multimedia Commission	www.cmc.gov.my
Philippines	National Telecommunications Commission (NTC)	www.ntc.gov.ph
Singapore	Infocomm Development Authority	www.ida.gov.sg
Taiwan	Directorate General of Telecommunications, Ministry of Transportation and Communications	www.dgt.gov.tw
Thailand	Ministry of Information and Communication Technology (MoICT)	www.ict.go.th
Vietnam	Ministry of Post and Telematics (MPT) Post and Telecommunications Corp. (VNPT)	www.mpt.gov.vn www.vnpt.com.vn

For additional information on each country's specific frequency availability, key regulatory issues, and approval processes, please go to www.buyusa.gov/asianow/communicasia.html and click on the country link.

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If you wish to receive information for **Broadcast Asia**, contact **Maura Kim** at (310) 235-7207 or maura.kim@mail.doc.gov

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DOMESTIC OFFICE	TRADE SPECIALIST	EMAIL	TELEPHONE
AR, Little Rock	Ray Riggs	Ray.Riggs@mail.doc.gov	501/324-6544
CA, San Rafael	Dan Giavina	Daniel.Giavina@mail.doc.gov	408/271-7300 ext. 104
CA, Fresno	Eduardo Torres	Eduardo.Torres@mail.doc.gov	949/660-1688 ext. 117
CA, San Jose	Keith Hwang	Keith.Hwang@mail.doc.gov	415/492-4548
CA, San Jose	Mari Felton-Beal	Mari.Felton@mail.doc.gov	408/271-7300 ext. 110
CA, Newport Beach	Maryavis Bokal	Maryavis.Bokal@mail.doc.gov	310/235-7207
CA, Los Angeles	Maura Kim	Maura.Kim@mail.doc.gov	626/575-5281
CA, Los Angeles	Rey Makalintal	Rey.Makalintal@mail.doc.gov	559/227-6582
CT, Middletown	Rosemary Gallant	Rosemary.Gallant@mail.doc.gov	860/638-6950
IL, Chicago	Bernadine Smith	Bernadine.Smith@mail.doc.gov	312/353-5096
IN, Carmel	Val Huston	Val.Huston@mail.doc.gov	317/582-2300
LA, Shreveport	Patricia Holt	Patricia.Holt@mail.doc.gov	318/676-3064
NC, Charlotte	Young Oh	Young.Oh@mail.doc.gov	704/333-4886 ext. 15
TN, Memphis	Ree Russell	Ree.Russell@mail.doc.gov	901/323-1543
TX, Houston	Alan Richel	Alan.Richel@mail.doc.gov	281/449-9417
VA, Richmond	Carol Kim	Carol.Kim@mail.doc.gov	804/771-2246
WA, Tacoma	Bob Deane	Bob.Deane@mail.doc.gov	253/593-6736